Weird Stuff From Dvorak's Backlog

Northern California's Computer Magazine

May 13, 1991 • 82

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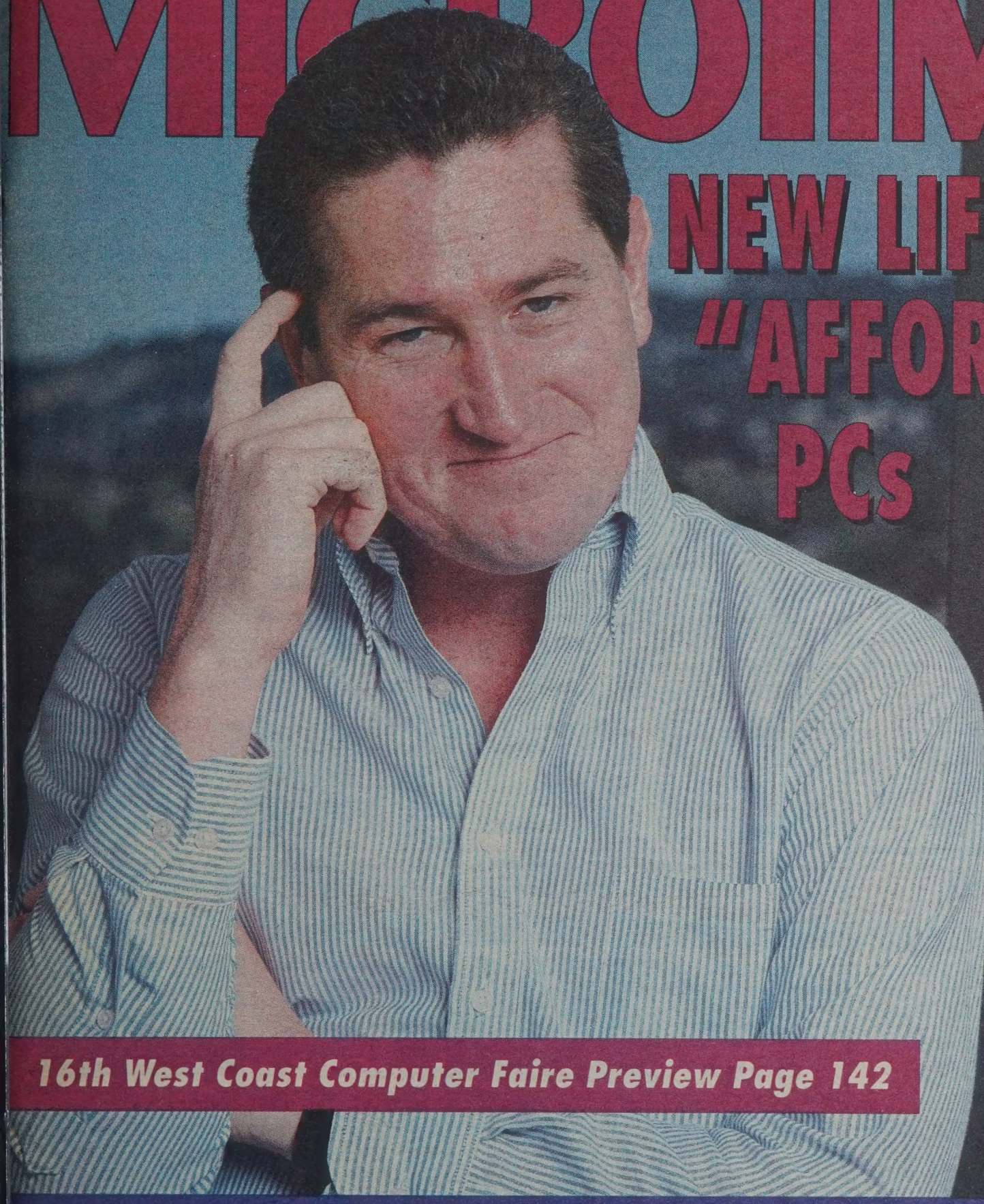
NEW LIFE FOR "AFFORDABLE" PCs

(Or, Why Is This Man Smiling?)

GeoWorks CEO Brian Dougherty explains why you don't have to throw out your old PCs, even if your office just standardized on Windows.
Story starts on page 64.



16th West Coast Computer Faire Preview Page 142

Apple's Low-Cost Color Macs

"Priced just a little too high to compete effectively with 386 clones, the IIsi is a good choice for Macintosh offices where the installed Plus or SE Macs are showing their age." Page 110

Financial Packages for Home, Office and the Traveling Investor

"Keeping track of investment transactions is not really an optimum use of the computer's power. What becomes really interesting is harnessing that power to operations that involve a lot of detailed mathematical analysis." Page 37

The Video Toaster Revolutionizes Presentations

Computer consultant Joel Tessler: "I can guarantee that when the guy with the Video Toaster goes into the boardroom, he's going to get the job over the guy with the pie chart." Page 202

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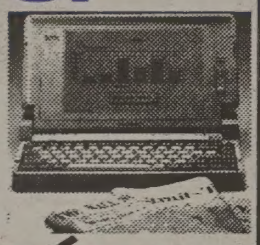

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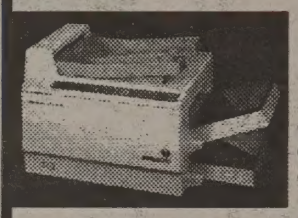

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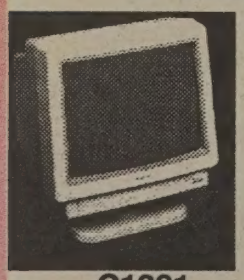

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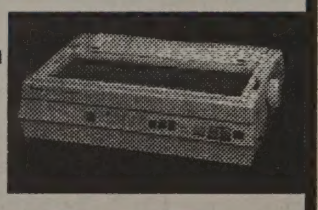

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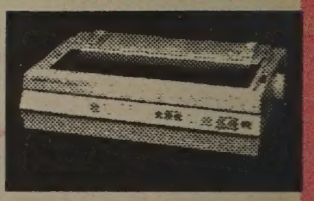

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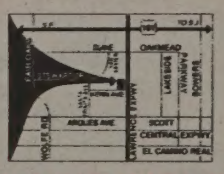

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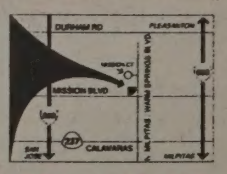

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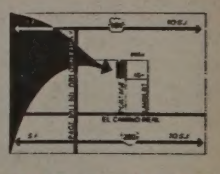

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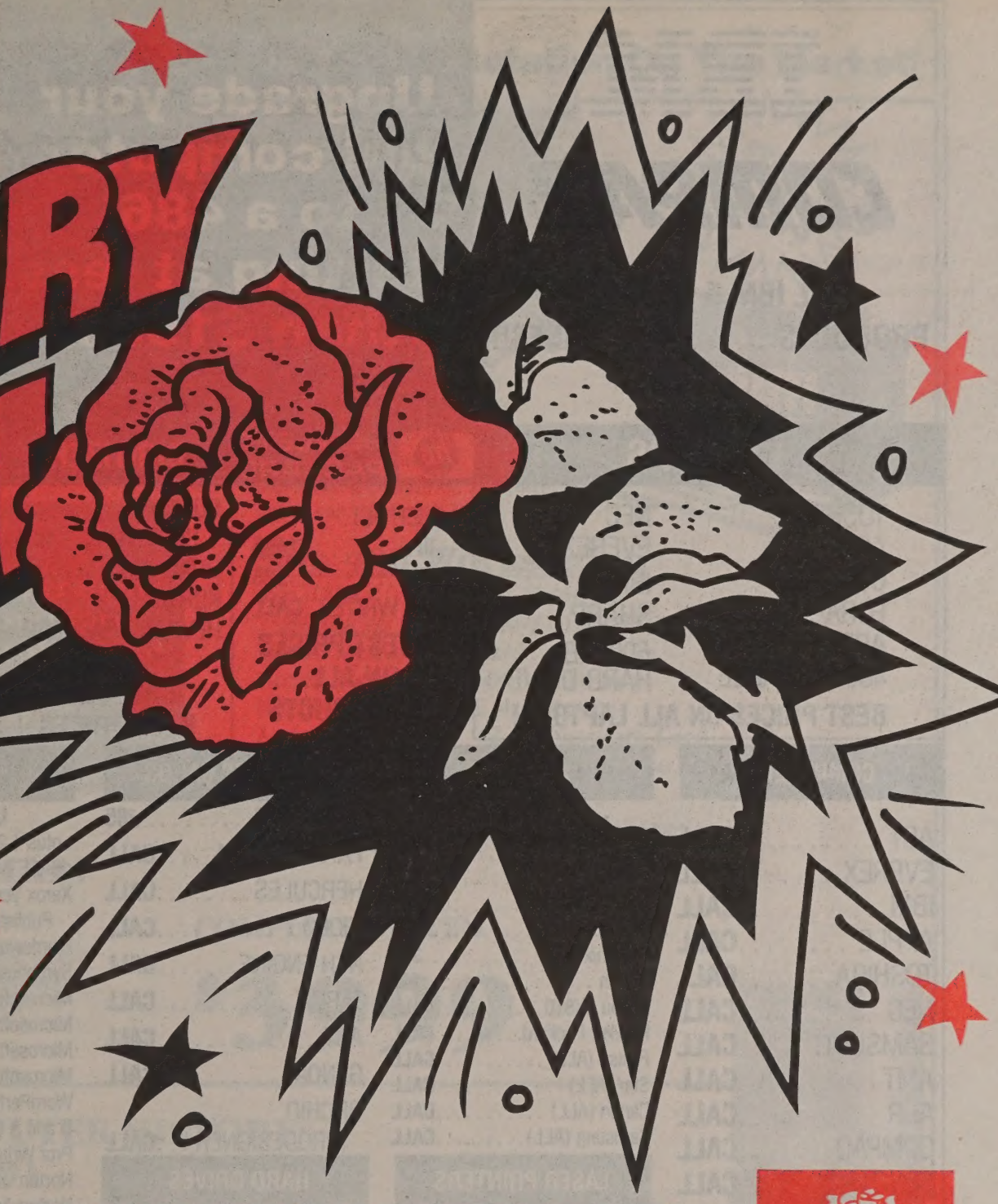

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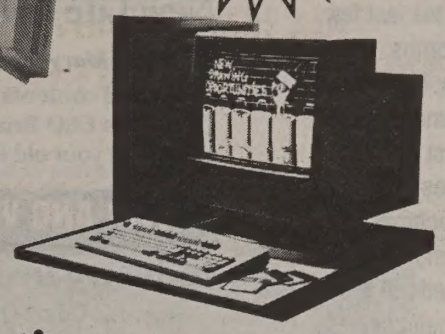

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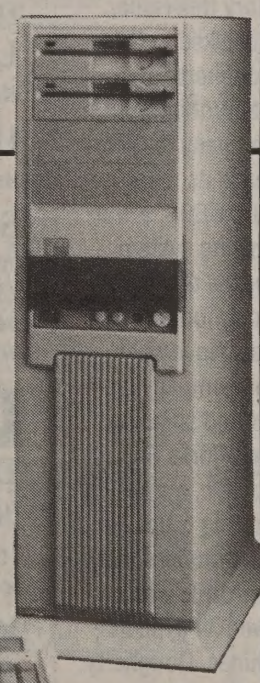

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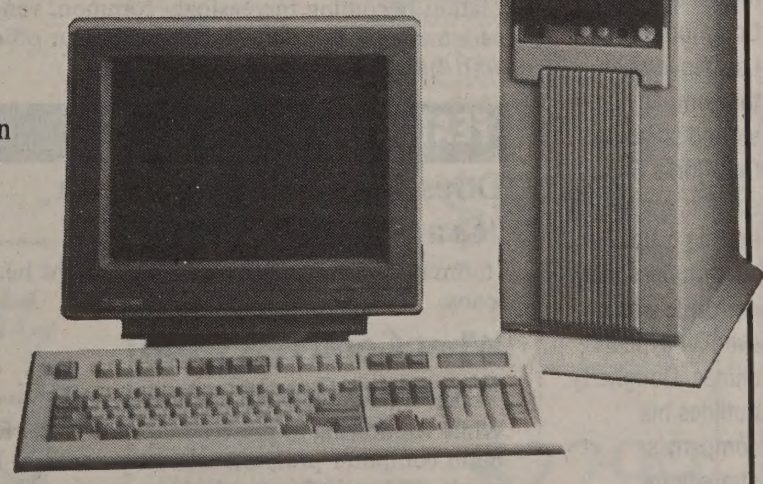

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A NOTE FROM THE EDITORS:
In the last few months, IBM and Apple have launched lower-cost product lines, featuring machines designed for the needs of the small business and home office user. There's a renewed interest in affordable PC technology, much of it from people who are no longer willing to put up with the relatively user-hostile A> prompt after they've seen Mac and Windows.

For our cover story this issue, we talked to Brian Dougherty of GeoWorks, a company that first made its mark with GEOS, a windowing system for the then-aging Commodore 64. Last November the company started shipping GeoWorks Ensemble, a multitasking graphical environment that performs well on even XT-type machines. Dougherty outlines his company's strategy for supplying the environment of choice for the millions of existing PC/XT/AT machines that can't take advantage of Windows. Story starts on page 64.

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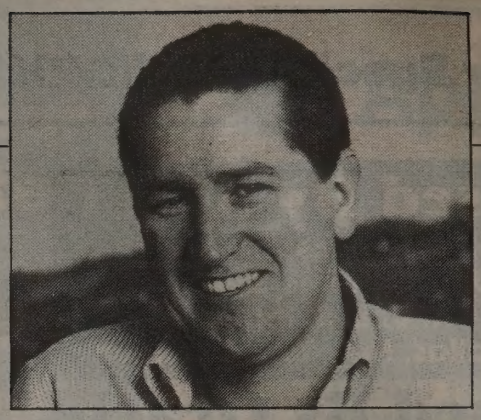

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16th West Coast Computer Faire Preview 142
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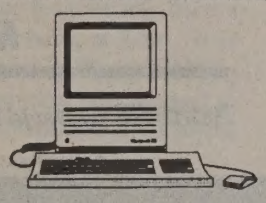
Macintosh IIcx (80/4)	$3049	Two Page Display new!	$899	Laserwriter Plus	$1899

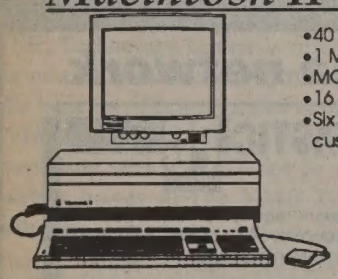
Macintosh SE [20/1]

- 800K Floppy Drive. **(ADD $100 FOR 1.4 MB FDHD SUPERDRIVE)**
- MC68000 Microprocessor.
- 8 MHz Clock Speed.
- 20 Mb Hard Drive .
- 1 Mb of Ram.
- One SE expansion slots for accelerators or large monochrome monitors.



$1049†

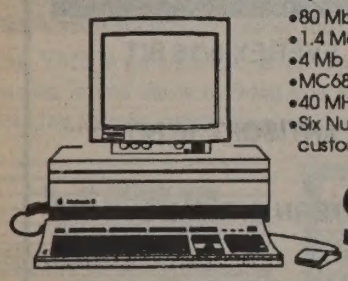
Macintosh II [40/1]



- 40 Mb Hard Drive
- 1 Mb of Ram.
- MC68020 Microprocessor.
- 16 MHz Clock Speed.
- Six NuBus expansion slots for custom configuration.

$2299*

Macintosh IIfx [80/4]



- 80 Mb Hard Drive
- 1.4 Meg Floppy Drive.
- 4 Mb of Ram.
- MC68030 Microprocessor.
- 40 MHz Clock Speed.
- Six NuBus expansion slots for custom configuration.

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LaserWriter IINTX $2999

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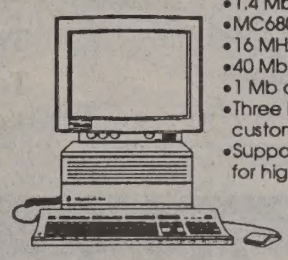
Macintosh IIcx [40/1]



- 1.4 Mb High Density Floppy Drive.
- MC68030 Microprocessor.
- 16 MHz. Clock Speed.
- 40 Mb Quantum Hard Drive
- 1 Mb of Ram.
- Three NuBus expansion slots for custom configuration.
- Supports 8, 24 and 32 bit Quick Draw for high quality graphics.

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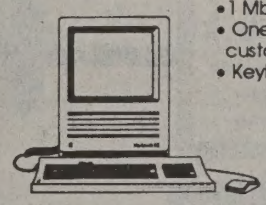
Macintosh PLUS



- 800K Floppy Drive.
- MC68000 Microprocessor.
- 8 MHz Clock Speed.
- 1 Mbs of Ram.
- One expansion slots for custom configuration.
- Keyboard included

$599

Macintosh Portable [40/1]

- 1.4 Mb High Density Floppy Drive.
- MC68000 Microprocessor.
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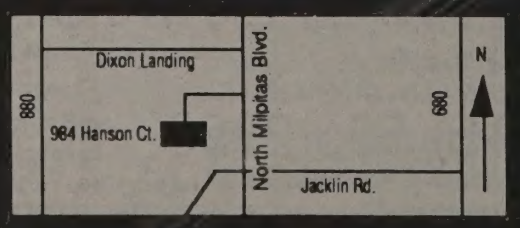

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Team VME Technology Impressive in Opening Day Debut

By MEGA HERTZ
CPU Press

Opening day at the VME Technology Inc. ball park was a resounding hit. Team VME is leading all competition in the home run category, runs batted in, customer service, price and performance. VME is already proving that the age-old adage "Service-Price-Performance wins every time" is no myth.

Team VME manager Fred Collins cautions, "We are not going to just rely on our heavy hitters to win us the title. It's service and support that will keep us on top and make Team VME the frontrunner throughout the season."

Just consider that Team VME is fielding AST, Novell, and Grid, three of hottest players in today's game, all on the same team. With those three heavy hitters and VME's rookie sensation, the VME Notebook, it's easy to see why odds makers are picking Team VME as the team to beat.

Their number three and four hitters, Novell and AST, have really been on a red hot hitting streak. The new VME dynamo 386SX 16MHz Notebook, just acquired from the R&D minor leagues has been a fantastic surprise. This new notebook, at 7 lbs., is in great demand and plentiful supply. Team VME is looking for strong support from this new product to help their middle relief, AST Notebook and Twinhead Notebook, which have been in short supply.

VME Technology Center would like to thank all the fans for their strong support at the new ball park. Their opening day contest was a big hit. Look for ongoing contest information each month.

VME Technology Center is offering try out sessions for new or small vertical market software companies. The benefits of being located at the VME Technology Center are enhanced through VME's network marketing which is offered to all companies with luxury boxes at the VME Technology Center ballpark.

Luxury boxes include receptionist and secretarial services, office furnishing and computers, mail room with shipping services, warehouse space, executive show room, in-house or on-site training, copy room, parking, location, location, location, and the expertise of the VME Technology Center staff.

Team VME scouts will be at all try out sessions, so come on in and show us what you have. Team VME is looking for new creative entrepreneurs.

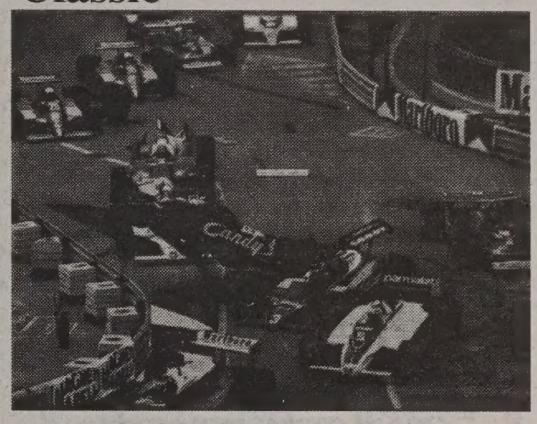
Team VME Prepares for May Classic

By SHADOW RAM
CPU Press

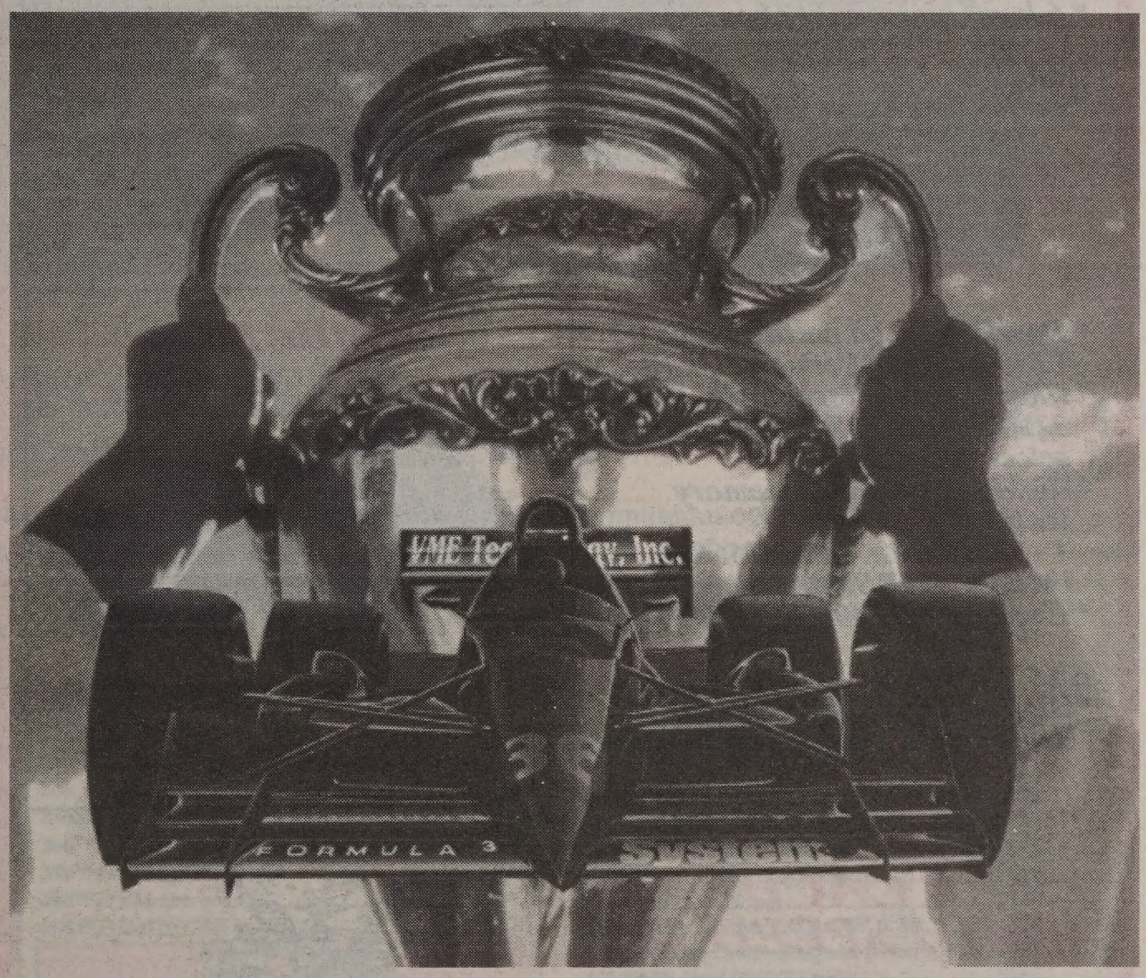
While the Turbo's are revving at Indianapolis, power supplies are humming for the VME Training Team. Team VME has entered 2 great machines: On-Site Training and In-House Training. Both are in the front row for this classic race.

VME Training Team is lapping the competition with new creative training pit stops. A half day of training for 10 to 12 people with the VME Training pit crew is free* with the purchase of computer systems from Team VME.

If one pit stop is not enough, the VME Training Team will formulate an on-going training strategy to meet your software requirements. Team VME guarantees their training will increase your company's productivity without increasing overhead. (If you are not completely satisfied, they will do it again at no charge.) Let the VME Training Team lead you to the Winners Circle.



ABOVE: In the R&D PC training race for the checkered flag, the competition often introduces services that "Crash".
BELOW: Team VME celebrates success in the Winners Circle.



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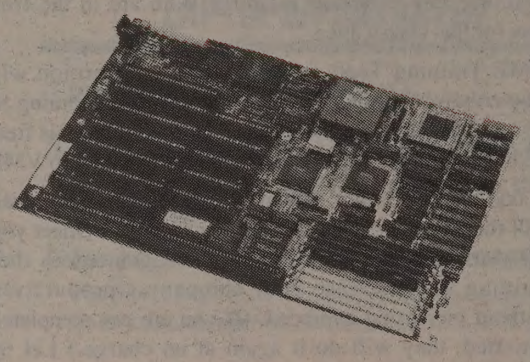

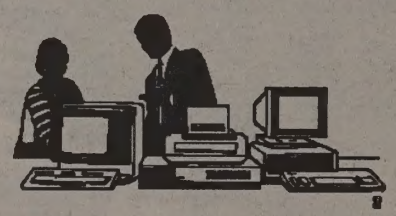

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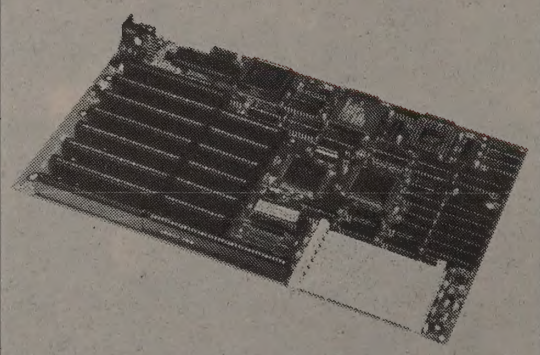
40 MHz 386



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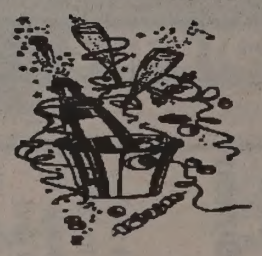

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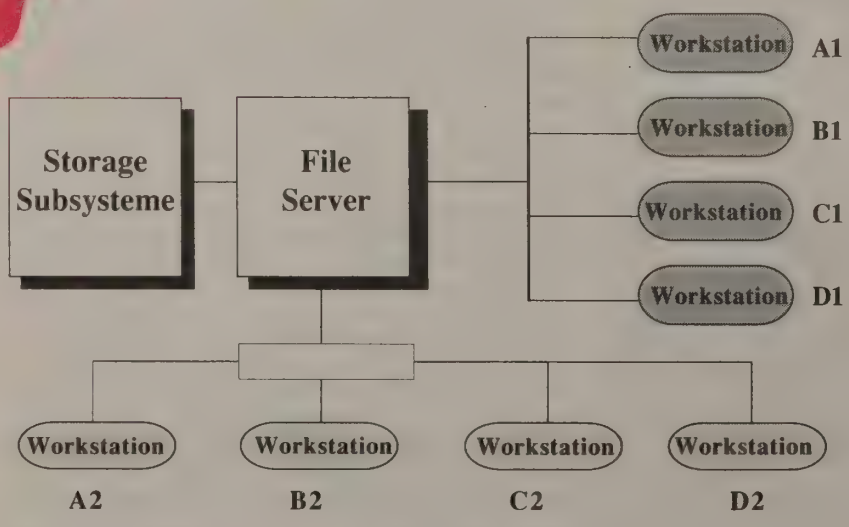

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$395 (16MHz)

SYSTEM PACKAGE

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INDUSTRY INSIGHT

Supreme Court Rules On Databases, New Workstation Standards Association Formed

BY PAUL HOFFMAN

PUBLISHED DATABASE DATA NOT COVERED BY COPYRIGHT

The US Supreme Court recently ruled that only the expression of the data in a database is subject to copyright, not the data itself. In a widely-awaited ruling covering telephone directories, the court, in a decision written by Justice Sandra Day O'Connor, upheld their 1985 decision in *Harper & Row v. The Nation* that facts themselves cannot be copyrighted, but that compilations of facts can. However, it is only the actual compilation, not the facts, that is protected. Thus, it is legal under the copyright code to duplicate facts from one source, as long as they are presented in a different and unique fashion.

This ruling will have a great impact on the still-fledgling database publishing industry, probably causing many companies that were going to publish large amounts of data to think twice. For example, if a company researches and publishes the results of all the elections in the country, another company could simply copy their data, put it in a different format (such as a better organization or with additional summarizing facts) and publish it themselves without infringing the copyright of the original company.

Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on USENET (phoffman @well) and MCI Mail (264-3171). He also writes popular microcomputer books.

Part of the decision even questions whether the second company has to rearrange the material if the first company is merely presenting data. O'Connor's ruling states that facts presented as just that are totally unprotected; they need to have a noticeable amount of originality added to the presentation. "Where the compilation author adds no written expression, but rather lets the facts speak for themselves, the expressive element is more elusive. The only conceivable expression is the manner in which the compiler has selected and arranged the facts. Thus, if the selection and arrangement are original, these elements of the work are eligible for copyright protection. No matter how original this format, however, the facts themselves do not become original through association."

Although the decision did not discuss databases per se, it is clear that the court was thinking about them, since the case revolved around a telephone book publisher who copied the data from another telephone book publisher. Although the publishing medium in this instance was paper, it is clear that this is a case about large amounts of data with little adornment, such as the white pages of the directory. Rural Telephone Company had sued Feist Publications for wholesale copying of its directory. The Supreme Court rejected the contention that Rural Telephone Company deserved a copyright on its white pages simply because they had collected the data, sorted it, and put it in a particular form. The court said that the directory contained only facts, not expression.

With the advent of CD-ROM, which has the potential for storing immense amounts of data on a single disk that's inexpensive to produce, many people assumed that one of the more popular CD-ROM areas would be business databases. This ruling greatly reduces the chance of that happening, since a company producing such a database could lose its research investment to someone copying the data and producing a disk at much lower cost. The only data that will get published is the kind that takes only a tiny amount of preparation, such as uncopyrighted government data.

On the other hand, this ruling may make more information available as companies take the data that's already out there in expensive databases and make it available very cheaply. This is how much of the shareware

This ruling will have a great impact on the still-fledgling database publishing industry, probably causing many companies that were going to publish large amounts of data to think twice.

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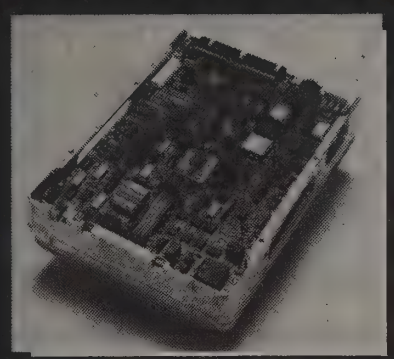

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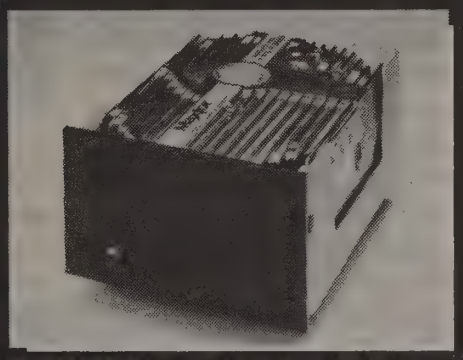

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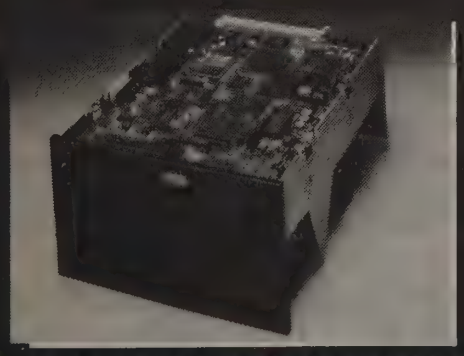

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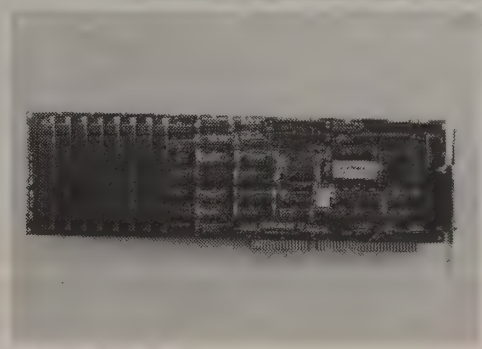

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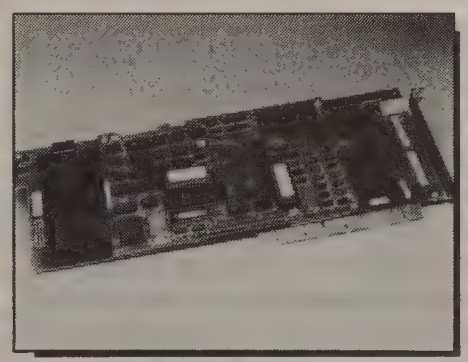

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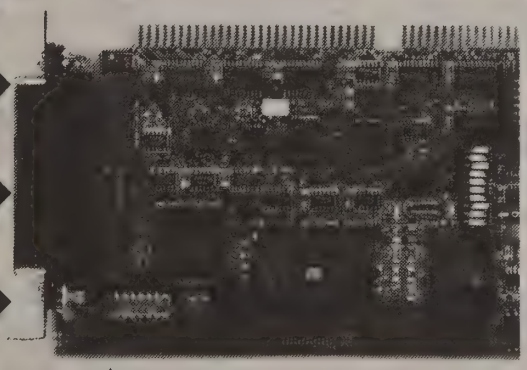

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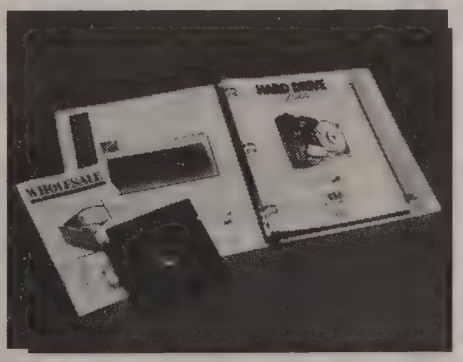

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DESIGN & LAYOUT: COMMUNICART

industry grew: hundreds of small companies selling disks of shareware for $3, having produced nothing original themselves. The shareware market is fairly large and the programs being marketed as shareware are often more professional and lower-cost than those on the shelves in the computer stores. Now that the copyright protection is off, the next cheap computer revolution may be inexpensive data on $25 CD-ROMs or jammed onto sets of a dozen diskettes.

While software companies may moan that the court didn't think of them or of technology in the ruling, they should remember the intent of copyright laws, which is to support original work. The ruling states that although it may seem unfair that the compiler's work in collecting and organizing the facts may be used by others without any form of payment, the copyright law is meant only to promote innovation, not compilation of facts. The ruling states, "To this end, copyright assures the authors the right to their original expression, but encourages others to build freely upon the ideas and information conveyed by a work. This result is neither unfair nor unfortunate. It is the means by which copyright advances the progress of science and art."

This doesn't mean that a database cannot be copyrighted, but it must contain a great deal of expression that can be easily seen to be protected. As the ruling noted, "This inevitably means that a copyright in a factual compilation is thin."

Press Release Of The Month

Why use English words and phrases when you can make up your own? Apple recently reorganized for the umpteenth time into new divisions. Expecting the press to be ever so excited by this, they titled their press release:

Apple Divisionalizes Product Efforts; Appoints Product Division Heads

Just in case you missed that wonderful new verb, they repeated it in the first sentence. One wonders why it had to have so many letters when "divisionizes" would have worked just as well. The author of the press release is obviously fond of the questionable practice of verbizing nouns.

NO COMMITMENTS: TWENTY-ONE COMPANIES IN SEARCH OF A STANDARD

When you have over a dozen major computer companies working together, it's impossible to keep a secret. One of the worst-kept rumors of the past few months came true when a consortium called the Advanced Computer Environment (with the cute ACE moniker for short) announced that it intends to make a hardware and software standard for workstations sometime in the future.

The announcement was meant to give businesspeople the impression that there would be a cohesive front against the current leaders in the workstation market (Sun Microsystems, IBM, and Hewlett-Packard) but only proved that consortia rarely produce anything useful unless they have a clear leader. ACE, unfortunately, has no leader.

The workstation market is made up of computers bigger and faster than the top level of the PC marketplace, but below full-fledged minicomputers. Workstations are generally used by engineers who need an incredible amount of computing and display power in order to solve problems in a reasonable amount of time. A small portion of the workstation market goes to executives who process huge amounts of data, but those people generally share minicomputers with others. Workstations are, by and large, expensive, powerful single-user systems with great graphics and built-in networking. Sun has a commanding lead in the workstation market, followed at a good distance by IBM and Hewlett-Packard.

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The twenty-one manufacturers include companies from all segments of the PC hardware, software, and minicomputer market. Its highest-profile members are Compaq and Microsoft. The basic idea is that the consortium will come up with a standard for the next generation of computers that can run today's MS-DOS software on a non-Intel RISC CPU. Right now, the only RISC chip that seems to be able to do that is the R4000 chip from MIPS Computer Systems. These high-end machines will run five to ten times faster than current 80486-based systems, but only cost three to five times as much. By making the specification for the hardware public, the ACE consortium hopes that many companies will manufacture compatible machines, much like the current crop of PC clones that emulate the old IBM AT, the IBM PS/2, and the new EISA bus.

For software, the consortium will rely on two sources: Microsoft for a future version of OS/2 (called "NT" for "new technology") and the Santa Cruz Operation for a future version of its UNIX product. New ACE software would be written for one or both of the operating systems, but the computers will also run older MS-DOS software, and possible older OS/2 and Windows software, assuming that Microsoft and/or the Santa Cruz Operation can make the backward compatibility work well.

As Microsoft has discovered with Windows, such compatibility is very difficult, and some of the most popular MS-DOS programs such as WordPerfect can crash Windows 3.0 unless many precautions poorly understood by beginning users are taken. Few people expect the software or the hardware to be ready for at least two years.

If ACE cannot assure backward compatibility, there is little reason for them to produce the standard, and even less reason for end users to buy the computers. There are already many solid standards for RISC computers. The two dominant standards are the SPARC standard from Sun, now supported by many small and large companies, and the 88Open standard for Motorola's 88000 series

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- AMI BIOS
- 8x16 BIT SLOTS
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- 1:1 2 FL/2HD CONTROLLER
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- 230W PS W/CASE HOLDS 5 DRIVES
- 101 ENHANCED KEYBOARD

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LANDMARK=115
- 1 MB RAM EXPANDABLE TO16MB
- AMI BIOS
- 8x16 BIT SLOTS
- REAL TIME CLOCK W/BATTERY BACKUP
- 1.2 MB FLOPPY DRIVE
- 1:1 2 FL/2HD CONTROLLER
- 2 SERIAL, 1 PARALLEL, 1 GAME PORT
- 230W PS W/CASE HOLDS 5 DRIVES
- 101 ENHANCED KEYBOARD

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386-33 MHZ 64K CACHE

LANDMARK=56
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- 1.2 FLOPPY DRIVE
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- 2 SERIAL, 1 PARALLEL, 1 GAME PORT
- 230W PS W/CASE HOLDS 5 DRIVES
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386-25 MHZ 64K CACHE

LANDMARK=33
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- 1.2 FLOPPY DRIVE
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LANDMARK=21
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- 1.2 FLOPPY DRIVE
- 2 FL/2HD CONTROLLER
- 200W PS W/CASE HOLDS 5 DRIVES
- 101 ENHANCED KEYBOARD

$535

386SX 20MHz 32K CACHE $619

286-12 MHZ

LANDMARK=16
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- 6x16 BIT, 2x8 BIT SLOTS
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- 2 FL/2HD CONTROLLER
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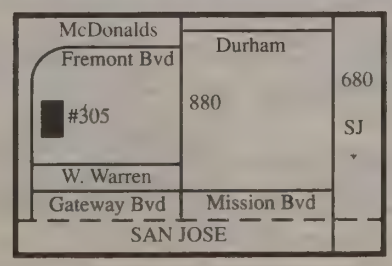

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of CPUs. Other smaller standards exist, and more are sure to pop up in the long interval before ACE computers are supposed to hit the market.

None of the other standards will run MS-DOS programs, of course, but that has deterred very few buyers. If MS-DOS compatibility is so important to workstation buyers, all Sun (or any hardware manufacturer, for that matter) has to do is make a $1,000 clone board that has an 80386SX, 1MB of its own RAM, and a few support chips to add in to existing or future RISC systems. Such a board would probably run more MS-DOS programs successfully and much faster than any emulation software, and would allow buyers to migrate from MS-DOS to UNIX without having to have two computers on their desktop. Unless ACE computers work flawlessly, workstation buyers will be very wary of buying from companies who have less experience in the workstation market than Sun, IBM, and Hewlett-Packard.

At the official announcement of the ACE consortium, it was clear that everybody there was looking at ACE computers as hedging their bets in the PC market. Companies like Compaq and Microsoft reaffirmed their commitment to Intel and the current market of computers for MS-DOS, Windows, and OS/2. They look at ACE as an entry into the higher-priced computer market if Intel is too slow with releasing the 80586 or high-speed 80486 chips.

Of course, they could just adopt the SPARC architecture like many non-US companies have, and many of the companies still might. None of them committed to the ACE architecture beyond saying that it could be a great thing and that they would contribute to the development of the standard.

If ACE catches on, the biggest winners will be Microsoft, the Santa Cruz Operation, and Silicon Graphics (which was given $50 million for a joint technology agreement by Microsoft). Then again, there could just as easily be no winners if the workstation market doesn't grow very rapidly or if all of the growth is picked up by the established players.

Unless ACE computers work flawlessly, workstation buyers will be very wary of buying from companies who have less experience in the workstation market than Sun, IBM, and Hewlett-Packard.

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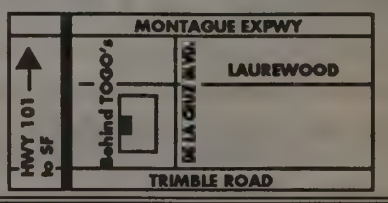

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Microcomputer News From Japan

(Excerpted from the weekly news digest of Japan Marketing Group, 400 Groveland Ave., Suite 312, Minneapolis, MN 55403, 612/871-7889. JMG covers products and events in the Japanese computer industry.)

➤ A major Japanese distributor, ASCII, has proposed a standard for installing software onto hard disks. That standard will be followed by ASCII, Microsoft, and other companies. The installation standard, called "Maoix," will get around the many problems that users have with the way that installation programs change, and in some cases, overwrite files on their hard disks.

➤ IBM Japan has established the PC Open Architecture Development Group to promote IBM-compatible systems. IBM is opening its architecture as a way to combat NEC's huge lead in the Japanese PC market. Initial members include Toshiba, Hitachi, Matsushita, Mitsubishi, and Sony. IBM will provide technical specifications on their hardware and software as well as compatibility testing services.

➤ Japanese manufacturers are becoming increasingly enamored of IC memory cards, cards the size of credit cards that store programs and data in non-volatile RAM. ASCII has developed a standard BIOS for these cards so that computers from manufacturers can read and write data on the cards of other manufacturers. They expect to license the BIOS to about twenty manufacturers this year.

IBM is opening its architecture as a way to combat NEC's huge lead in the Japanese PC market...

➤ IBM Japan is also hoping to get more American companies to sell IBM-compatible software in Japan by distributing a software development kit for DOS/V, the Japanese version of MS-DOS. The kit includes a copy of DOS/V, a manual in English, a Japanese keyboard, and a language conversion tool.

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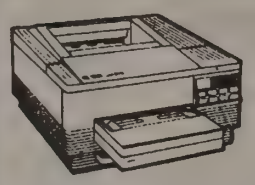

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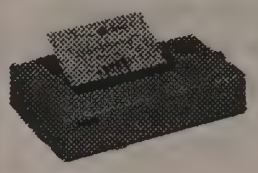

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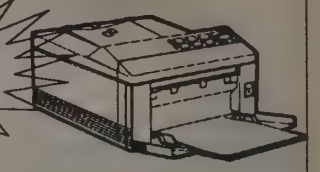

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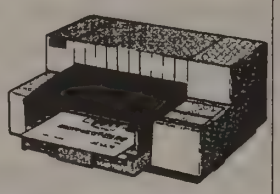

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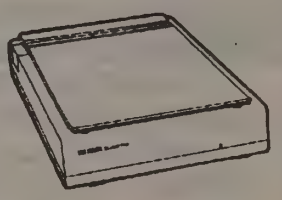

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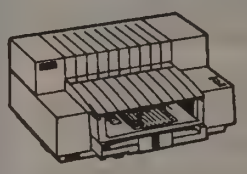

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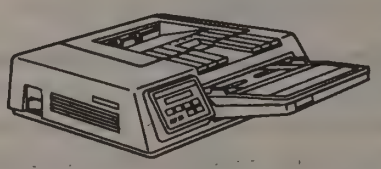

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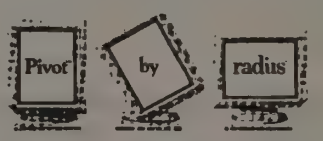

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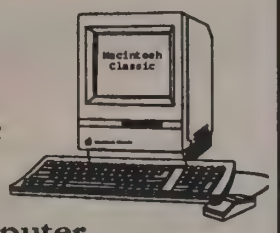

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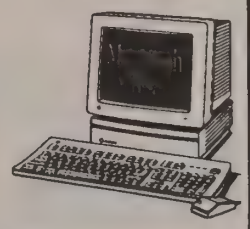

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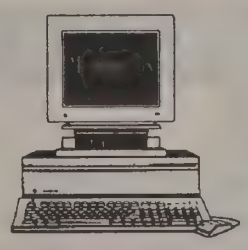

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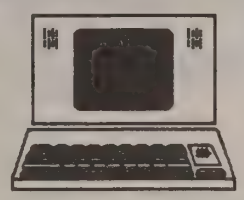

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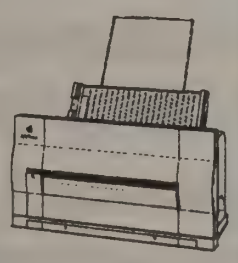

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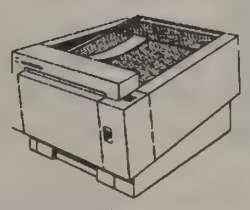

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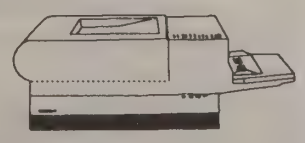

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Get Online, Or Fall Behind!

The World Is As Close As Your Modem

BY JIM WARREN

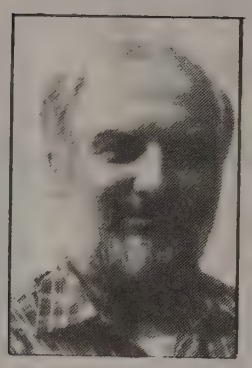
Almost seventy-five million Americans had daily contact with computers in 1989—that's about one person in three. This March, the Census Bureau reported the results of studying 1989 computer usage in the nation. According to a *San Jose Mercury News* report, almost half of all students (46%) used computers in school. Over one third of all adults (37%) used computers at work. And 15% of all homes had computers—40% for households with $50K or more annual income; even 5% for homes with less than $15K income.

But most of these information machines are not yet linked with robust information resources. OK, folks—it's time to "join hands" and take control of our destinies.

REALIZABLE FANTASIES

FOR A GOOD TIME, CALL ...

Information and communication resources available through your computer are almost endless, requiring only a hundred-buck modem and some shareware telecomm program. (Of course, you can pay more.)



Copyright © 1991 by Jim Warren. All rights reserved. *Jim Warren organized and Chaired the recent First Conference on Computers, Freedom & Privacy. He founded* InfoWorld, *the DataCast proposal for broadcasting paperless electronic newspapers, Video Initiative, Wireless Digital, Initiative, Inc. and one of the nation's largest public microcomputer conventions. He was founding host of PBS television's "Computer Chronicles" series, founding editor of* Dr. Dobb's Journal, *founding President of the Microcomputer Industry Trade Association, and has chaired various computer professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics.*

Thousands of wide-area computer networks connect millions of computers for tens of millions of users. Most nets are tied together globally.

Usenet, as a single example, has about thirty thousand host computers, about five million users—and no management, at all. Through cooperative anarchy, it provides massive worldwide information services. It carries about eight hundred "newsgroups"—subject areas—with about six thousand articles per day. Users exchange information and views, worldwide.

There's Bitnet (Because-It's-There Net), CSnet, NSFnet, and on and on. Almost invariably, their teleconferencing and email services are free to anyone with access to any one of the thousands of host computers. These nets often connect into MCI Mail, CompuServe, BIX, Fidonet, etc.

And, there are thousands of low-cost, public-access hosts.

HOSTS FOR PARTIES & WORK

E.g., The WELL (Sausalito, CA) costs $10/month + $2/hour. It has about 4,500 users and 130 teleconferences—including Sexuality, Books, Classifieds, Grateful Dead, Recreation, Arts, Sports, Parenting, Legal, regional info exchanges, and so on. Essentially no censorship; participants from a wild array of professions, trades, crafts, and views provide robust discussion. Like most, The WELL offers unlimited email to other hosts at no extra cost (voice 415/332-4335; modem 332-6106).

Non-local dial-up access to The WELL costs $4.50/hour (through any CompuServe local access number; 800-848-8980#2), or $30 for thirty off-peak hours/month via SprintNet's PC Pursuit (800-736-1130), etc.

The Institute for Global Communications in San Francisco (415/923-0900) is an example of more focused net services. It facilitates discussion and planning among over five thousand peace and environmental subscribers ($10/mo + $5/offpeak hour). They offer up-to-the-minute news—often long, long before it appears, if ever, in the mainstream press. This is a common feature of net info services.

One more example: Portal Communications in Cupertino (408/973-9111) is yet another low-cost public-access system ($10/mo, no hourly fee). It offers teleconferencing, chat-mode, global email, etc. Portal also offers another option—a UUCP link permitting your home computer (PC, Amiga, etc., with appropriate software) to be a host on that giant Usenet network. It's $34.95/month + $2/hour if you know what you're doing, or $95/month with lots of personal hand-holding.

And then there's Prodigy...

PLODIGY'S [SIC] PRACTICES

IBM and Sears own Prodigy, where several hundred thousand obedient consumers pay to receive advertisements, and to use some censored teleconferences and electronic mail that doesn't connect to most email users.

Last year, some subscribers complained about Plodding price increases and censorship—suspicious stuff, like a coin collector asking if anyone had a Roosevelt dime (mighta beena covert sports bet?!). What's worse, some sent complaints to other Plodding users by Plodding email. Some even complained to Plodding advertisers. Worst of all, some suggested boycotting Plodding advertisers.

In November, Cox News Service reported that Prodigy "banned

Continued on page 246

Forget the lawsuits. Forget creating yet another gawd-awful regulatory bureaucracy. Let those paying for Prodigy's services—advertisers and subscribers—decide whether the services justify the fees.

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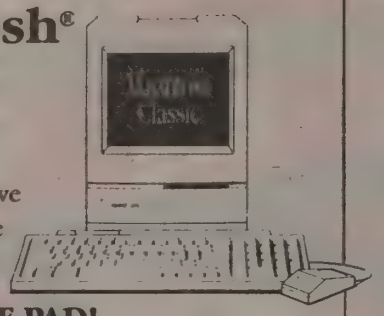

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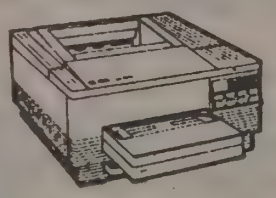

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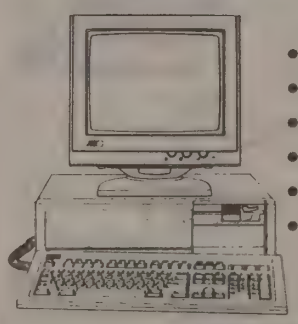

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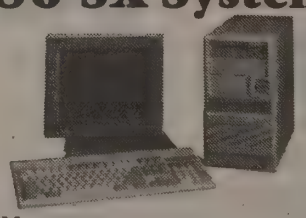

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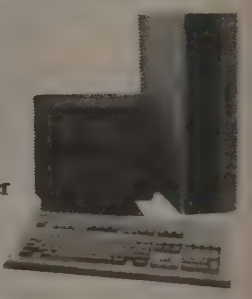

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Panasonic KX-P4420 8PPM	1245
Canon LBP8III, 8PPM 1 MB	1750
Canon LBP4, 4PPM 1 MB	950
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Tiny Technology

UPS Experiments With Handwriting Recognition, Seiko Offers Compact Info Manager

BY ED KAHN

The miniaturization movement continues and will do so for the foreseeable future.

A couple of days ago the doorbell rang—it was the United Parcel driver, who comes here frequently with deliveries of new products. But this time, I noticed the driver himself rather than the package he was carrying.

In the past, he had always asked me to sign on the appropriate line. But this time, he asked me to sign in the appropriate box on a small hand-held computer. Now, instead of having a bunch of handwritten memos, the company will have a computerized record of deliveries and the appropriate signatures.

This is indicative of what's been happening for the past few years—handwriting recognition is currently the big push in small computers. Specialized products are being developed for specific applications. Both Microsoft and GO Corporation are developing operating systems that will read handwritten entries. While GRiD has had computers that will accept handwritten input for several years, the new concept seems to be that computers can be designed around specific applications and that employees can enter data directly into the computer by hand rather than keyboard.

This seems to combine the best of both computers and paper. Meter readers, for instance, are able to enter the data by hand into a computer. I suppose this will result in the bills being prepared from this initial entry without having to be reentered time after time. With the small computer market growing by leaps and bounds, these specialized applications for handheld machines can be expected to grow in the next few years. Quite possibly these specialized products will, over time, generate more money than laptops themselves.

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THE SEIKO DATA DIRECTORY

But back to the United Parcel guy. After I examined his new data entry device, I opened the package he had brought to find a new little product from Seiko. This was a tiny Data Directory ($169.99) that holds telephone and address information as well as memos on any subject. The whole thing weighs 3.5 ounces and can hold 32K of data. This is about sixteen pages of information, quite enough for most phone directories and other information that you may wish to have handy, in a tiny electronic package.

The device is simple to operate. As Seiko says, it is unusual for the instruction manual to weigh less than the product, but indeed, that's the case. The instructions are only slightly more complicated than those you get with a wrist watch. Nevertheless, the gadget is quite powerful. It's not as powerful as the larger units like the Casio B.O.S.S. or Sharp Wizard, which cost a good deal more than this product. It is, however, easier to operate.

In addition to the data collection, it also doubles as a powerful calculator and is powered by batteries that will last hundreds of hours.

You turn on the device by pushing either a telephone or notepad button. If you choose the telephone option, you will be taken to the last entry that you examined. You can easily move anywhere in the list by pressing a letter on the keyboard—which is wisely laid out in QWERTY fashion. Arrow keys let you move up and down the list from the starting point of any letter. Pressing the entry key shows you the telephone number and address. In addi-

The Seiko Data Directory is quite powerful—not as powerful as the larger units like the Casio B.O.S.S. or Sharp Wizard, which cost a good deal more, but easier to operate.

tion, you can scan the whole database and find 800 numbers, for instance, or everyone named Mike.

But the real kicker is that there is the ability to transfer data between a PC and this 3.5" x 5" device. You install software on the PC which allows you to import and export data into the PC-Link program, which comes with the Data Directory. From there, you can download the data onto the Seiko. Likewise, you can import data from the Seiko to the PC through the PC-Link program. It all works smoothly. The concept is well thought out and performs flawlessly—within its inherent limits.

The software is designed to filter data files from Sidekick or PC Tools directly into the Data Directory. This part is easy. I, however, run a strange assortment of software and wanted to give this a real workout. I spent several hours trying to take my address and phone directory from HotLine, still my favorite telephone organizer software package, and import the date into the Data Directory. I first exported from HotLine and then filtered the data through an address book program that I use to print out my personal phonebook. Despite all of my attempts, however, I was unable to get the data into the Seiko.

I know that if I devoted more time to this, I would succeed, but the fact is that I routinely print out a beautiful little phonebook from my data and carry that in my briefcase. The booklet is no larger than the Seiko unit and it works like a charm.

In the end, I decided that the Seiko Data Directory is a clever, well designed gadget, but nevertheless a gadget. I have trouble finding a reason to use this electronic device instead of old-fashioned paper. There is one advantage, however: you can set entries to be hidden unless you access them with a password. This means you can enter all of your credit card numbers and the like without fear of this information becoming available to someone who picks up the gadget.

If, however, you use one of the programs that easily converts to the Data Directory format, the device is convenient. The one thing that would get me to use this thing would be if the Data Directory made sounds so it could be used for a telephone dialer. Those gadgets always appealed to me, but I do not have the patience to reenter all of the data found in my personal phonebook. ■

RESOURCES:

Data Directory $169.99
Seiko Instruments
2990 W. Lomita Blvd.
Torrance, CA 90505
800-873-4568

HotLine 2.2 $49.95
Smith Micro Software, Inc.
P.O. Box 7137
Huntington Beach, CA 92615
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Tandy 2810 HD $2499
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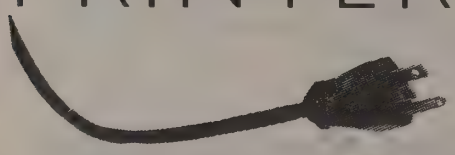

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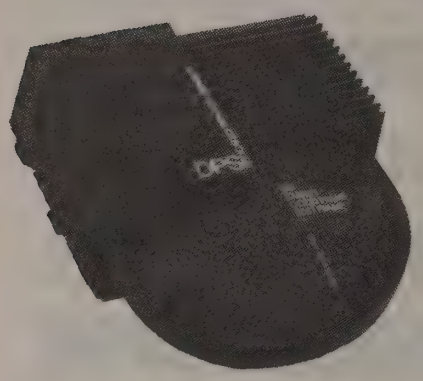
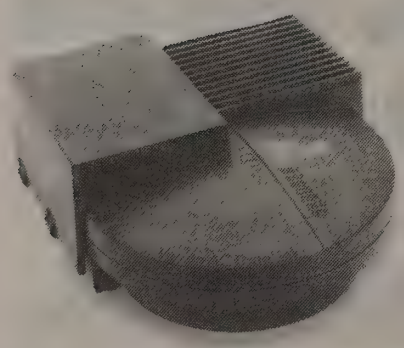


About the size of a portable CD player, DataLinks are designed to allow PC's to communicate with peripherals like Printers, Plotters, Modems or even another terminal 300 feet away through the AC power cables already in your walls. Plug a DataLink unit into your wall socket, connect it to your computer (serial or parallel), and another unit to a peripheral and you are communicating—cable free!

DataLinks are independent of the operating system and work in any computer environment. It is entirely self-contained; all software needed to operate the DataLink is housed inside inherent microchips. DataLinks communicate at speeds up to 800 characters per second, about one page every 3 seconds. Encode sensitive data with the built in 22 bit encryption as well as the 12 bit address forcing eavesdroppers to sort through over four million possible combinations!



An accessory unit called the Verran AC DataLink DPS (Dedicated Printer Sharer) is designed to handle print spooling jobs from as many as seven computers. It s 32K buffer holds the equivalent of 16 pages of text.

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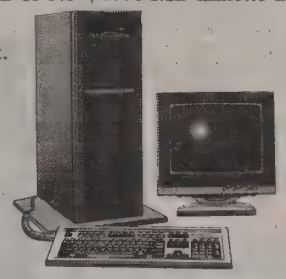

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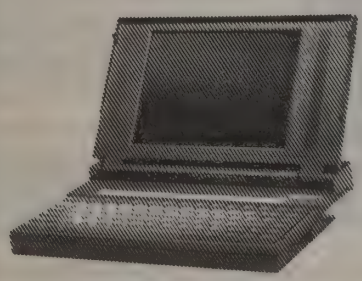

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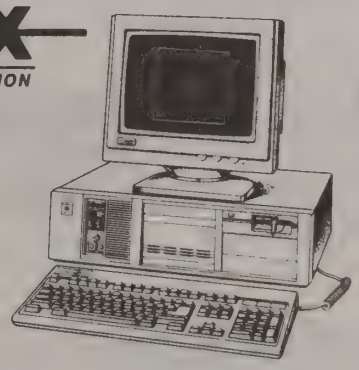

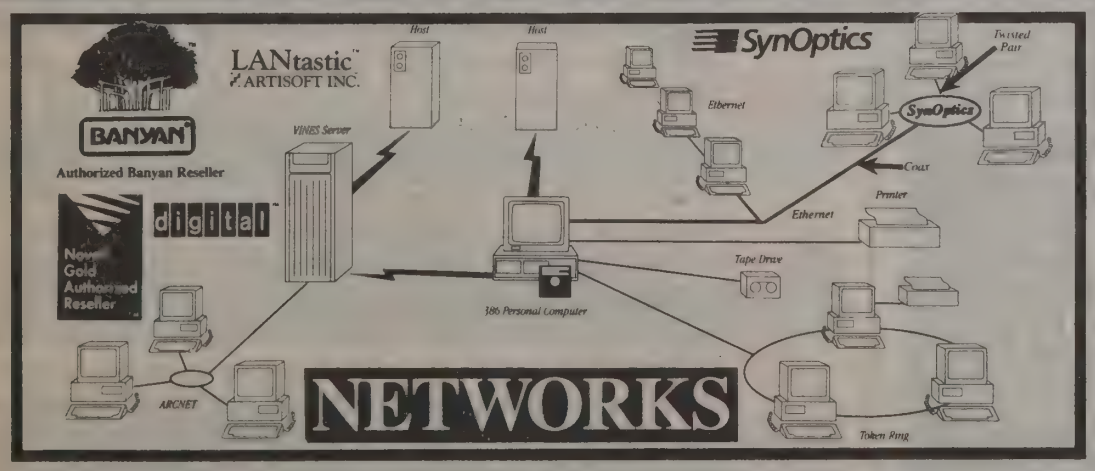

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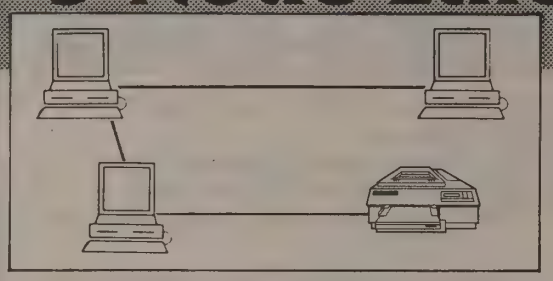

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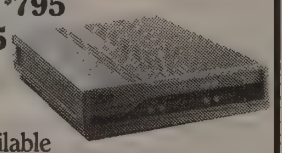

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BUSINESS SOLUTIONS

Computer Of The Month:

Tandy 2810 HD

Tandy has long been a major player in the computer field, but generally their laptops have seemed overpriced for what you get. Despite their technical excellence, I've always found that they lack features I want. That has all changed with the introduction of this lightweight computer, which includes all of the features required by this class of computer.

The 2810 HD is a 6.7-lb. computer, just 1.7" thick. There is nothing revolutionary about this box. Rather, it is a solid, well-thought-out machine. It is powered by an 80286 central processor running at 16MHz. Standard features include a 20MB hard disk and a 3.5" 1.44MB floppy drive. In addition, there is a standard 1MB of memory, which is expandable to 5MB ($399.95/megabyte). This is a horrendous price for memory expansion. I don't know whether third party suppliers offer memory at a more reasonable price. For those who need it, a math coprocessor ($326) is available.

With an external keyboard and monitor, this computer really will do everything that we want from a desktop unit except take expansion cards.

The VGA display is backlit for easy readability, measures 7.5" x 4.5", and shows black on white. It supports an external monitor.

The keyboard is an 84-key design with an embedded numeric keypad. While I don't like embedded keypads, with this size computer there is little alternative. Tandy, however, is aware that lots of people will want to use this for their only computer and therefore has provided a port for connecting any standard AT keyboard. With an external keyboard and monitor, this computer really will do everything that we want from a desktop unit except take expansion cards. In any case, the provided keyboard has a layout that I like and is the only laptop keyboard that I remember that makes it easy for you to change the control and caps lock keys through the setup program. This is a really nice feature—we all have preferences of how we want our keyboards laid out, and this computer allows you to have it your way.

The battery system on the 2810 HD is also well designed. The NiCad rechargeable battery is quite small and provides up to 3 1/2 hours of use, provided you set the energy saving options to maximum efficiency. In any case, the battery will recharge in two to four hours, depending on whether the computer is being used or not. Extra batteries are available for $99.95.

The 2810 HD comes with MS-DOS 4.01 installed on the hard disk, so the computer is ready to operate out of the box. A final piece of software is Tandy's DeskMate, the proprietary graphical user interface. This is an easy way for novices to begin. Included in DeskMate is an extensive tutorial that walks you through the program.

For the person who wants to enter the computer world through the purchase of a portable, this is certainly a unit to consider. Radio Shack has designed this product to provide power to the sophisticated user and ease of use for the novice. The documentation, while not voluminous, provides clear and easy instructions. A one-year warranty is included. A full line of accessories including modems ($199.95) and carrying cases ($39.95 & $49.95) is available. ■

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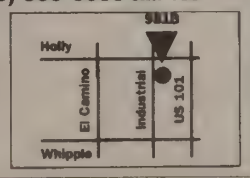

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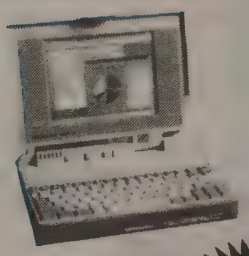

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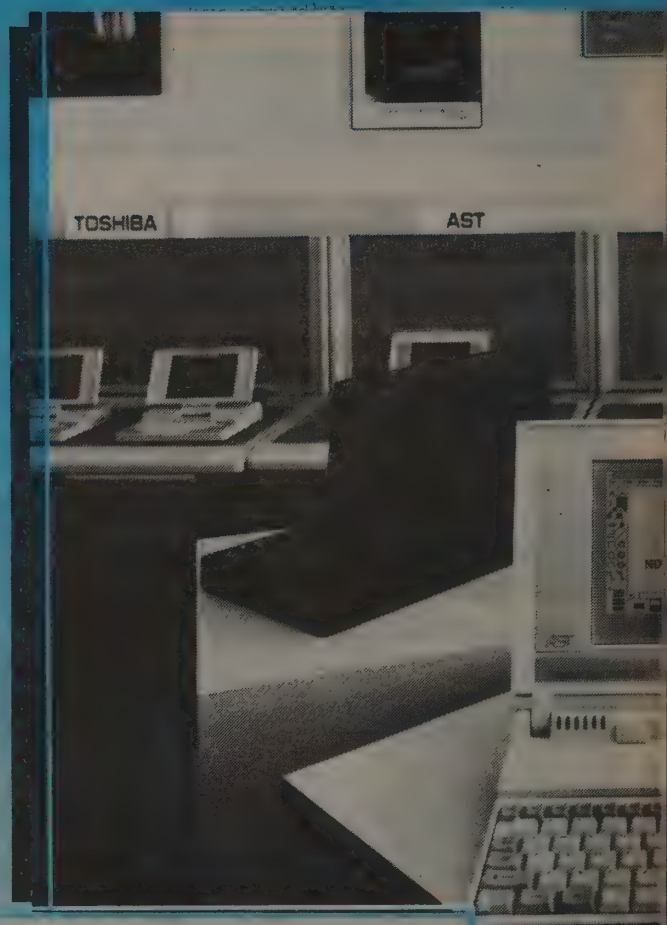

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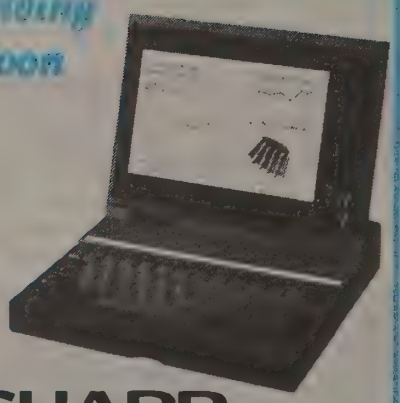

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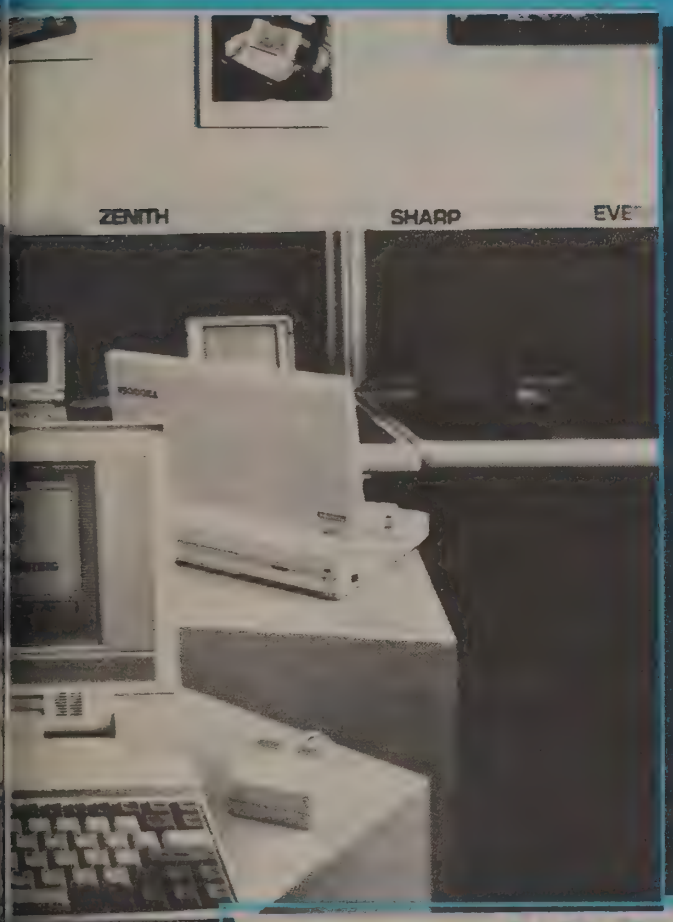

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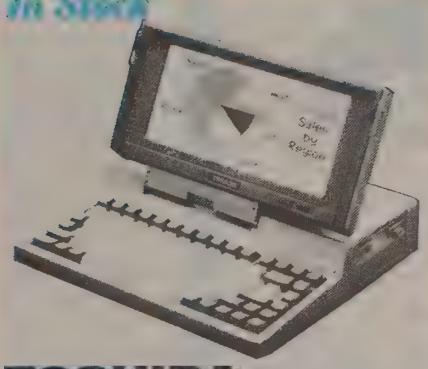

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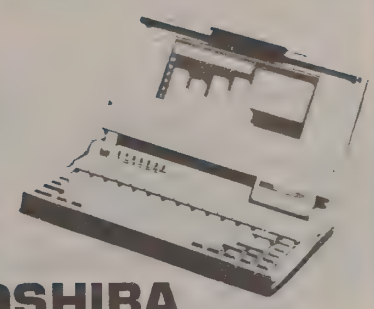

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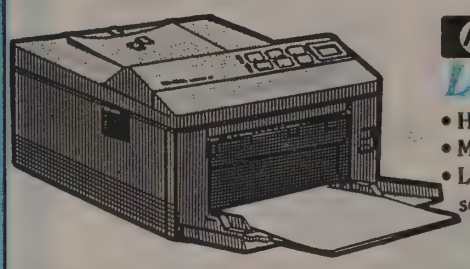

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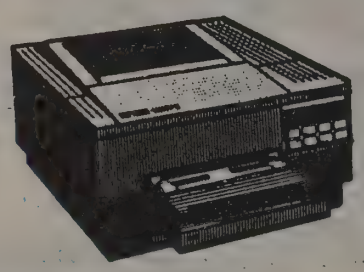

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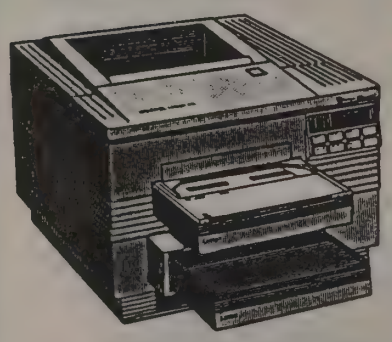

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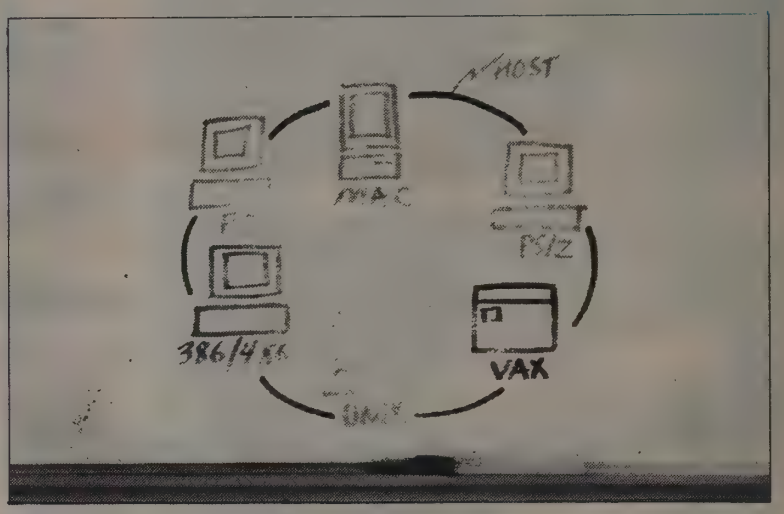

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Stock Trading On The Go

Financial Packages To Help You Manage Your Investments, Wherever You Are

BY ED KAHN

For the investor on the go, carrying a laptop loaded with investment software makes it possible to stay in touch even when away from the office. Nevertheless, for most traveling investors the dream of the portable computer as a useful investment tool remains unrealized. Most still make investment decisions based on what their broker tells them or on independent research based on the printed word and number.

Financial software packages can easily be coupled with the power and convenience of portable computers. It's worth examining whether such a combination can help us, either with making more timely investments or with keeping better records of the current ones. Investment software falls roughly into two categories: record keeping and decision making packages. The record keeping software typically sells for a good deal less than the decision making products.

QUICKEN 4

The simplest record keeping software that's really useful to the stock market investor is Quicken 4, the newest and most sophisticated version to come from Intuit. It will run on almost any IBM compatible computer. With each successive version of the program, Intuit has added new capabilities without violating the simplicity that's made this powerful program such a success. It will track many checking accounts as well as savings accounts, credit card balances, and, in the newest version, stock transactions.

This simple program will allow you to accurately manage all of your checking accounts, in addition to a small portfolio. It's not designed for the investor who keeps track of a huge number of stocks, bonds, options, and mutual funds; however, it gets the job done perfectly for the person who has a few stocks or mutual funds and wants to get away from the notebook with scrawled entries that are confusing and hard to decipher.

At $59.95 it's hard to go wrong with Quicken. Over the past few years, I've traveled back and forth between my office and my home in the country. Keeping Quicken on my portable has enabled me to keep all of my records up to date wherever I am.

ANDREW TOBIAS' MANAGING YOUR MONEY

If you want a more complex investment management tool, take a look at Andrew Tobias' Managing Your Money. This package does a lot more than help you with bookkeeping. The current version, selling for $219.98, is a bundle of tools integrated into a powerful package.

The program is divided into chapters, each designed for a specific purpose. In addition, there's a calculator and a simple word processor that allows you to attach notes to items you enter into the record keeping portions of the program. While it takes a little while to learn, the program is put together around simple principles and is amusingly documented by Tobias—one of the truly readable writers in the field. His documentation alone is worth the price of admission.

The package does a host of chores. One module is devoted to budget and checkbook considerations. Among the other things that the program will help with are tax estimation and financial calculations, such as figuring out the amount of interest on a loan and preparing amortization schedules. If you use all of the modules of the program, you can prepare a financial statement with the touch of a key and have instant access to credit card and loan balances.

But despite the long list of tasks the program will handle, the core of the program as far as I am concerned is its ability to manage an investment portfolio. You can set up many accounts—a separate one for yourself and for your wife and each child, for instance, or even each separate account you maintain with different brokers. Each time you make a stock transaction, you enter it into the appropriate account; you can examine your track record at any time. It's easy to update prices; it's also possible to view several accounts together and see how the aggregate picture looks. At any time you can learn your actual as well as annual rate of return.

The program also takes into account your brokerage commissions and suggests if you could be saving money on your transactions. You can use this module to track stocks, bonds, options, and mutual funds. It will even work for cataloguing and coding stamps, coins, and antiques.

If you buy the companion program, Managing the Market, you can connect through a modem to Dow Jones News Retrieval and automatically update your portfolio any time you like. If you have a large portfolio, this is a great convenience, as it is time-consuming to enter each price manually. For the investor with only a few issues, it is painless to manually update prices weekly or monthly.

The big payoff of such a program comes at the end of the year—with a few simple keystrokes, you can get the information you need for tax preparation. A simple report shows all sales that have occurred during the year, showing cost, sale price, and your profit or loss. Powerful as this program is, it will run on just about any IBM compatible with a minimum of 256K of memory and two floppy disks.

One of the many features of the program is a daily reminder module. This makes it especially useful for the executive traveling with a portable. One user told me he enters all of his

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data on his desktop machine, but then copies the files to his laptop so he can examine just where his finances are when he is on the road. In addition, Managing Your Money has all of his addresses and phone numbers for him when he is away from home.

ANALYSIS PACKAGES

Keeping track of investment transactions, however, is not really an optimum use of the power a computer packs. What becomes really interesting is when we begin to harness the power of the portable to operations that involve a lot of detailed mathematical analysis.

For years, investors have argued over the merits of fundamental versus technical analysis. Those in the fundamental analysis camp maintain that if a company has increasing earnings, makes a good product, and is well managed, it will enjoy higher and higher stock prices. Technical analysts, on the other hand, argue that the story of a stock is told in its chart displaying market data. They say that all other variables are reflected in the price movement and trading volume of a particular stock. They rely heavily on math intensive analysis.

Although there are a number of programs targeted to the investor following fundamentals, I find them generally less rewarding than the printed page. But when it comes to technical analysis, there's nothing like a computer to speed things up. To do mathematical computations by hand is nearly impossible for the individual. So now, for the first time, the investor who relies on technical analysis has the opportunity to compete on a level playing field with the professional.

Technical analysis software packages all have a few things in common. First, each of the programs relies on the fundamentals of technical analysis as explained in standard books on the subject. Despite the technical jargon of the programs, all of them are designed for use by the computer novice who has no background in technical analysis. In a sense, each of the programs provides a good introduction to the subject.

The second point is that, unlike the bookkeeping programs already discussed, these programs do demand a bit more from the computer itself. In most cases, it is recommended that the computer be equipped with 640K of memory. Although it's not required, I found that the presence of a math coprocessor greatly speeded up computations in some of the programs. Another requirement of most of the programs is a modem to download the daily data into the computer for analysis by the program. All of the programs will allow you to input the data manually, but if your are serious about using these tools, some sort of downloading of data is essential. A final requirement is some kind of graphics adapter. In the case of laptop users, this is no problem—all laptops can handle graphics. You will enjoy each of these programs more if you have EGA or VGA capability. And finally, although some of the programs can technically run on a two-floppy-drive system, in fact a hard drive is required to get the most out of the programs. So virtually any laptop with a hard drive will meet the rest of the requirements.

METASTOCK PROFESSIONAL

MetaStock Professional, which sells for $349, is a computer graphics program that will let you analyze stock, bond, mutual funds, and futures price and volume movements in a number of different ways. Although more than forty indicators can be analyzed, the

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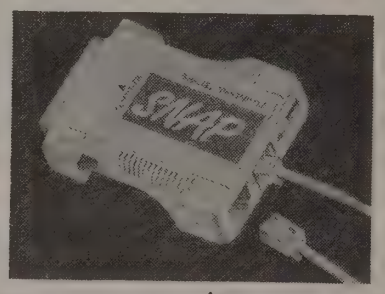

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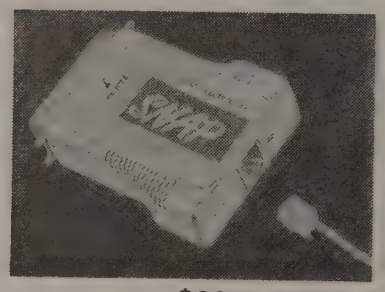

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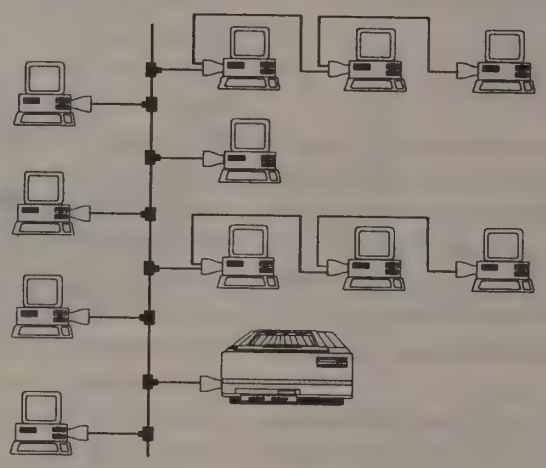

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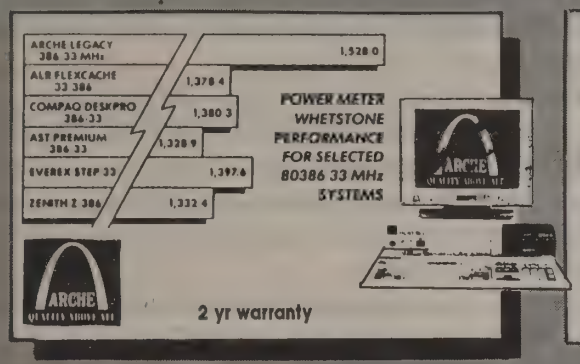

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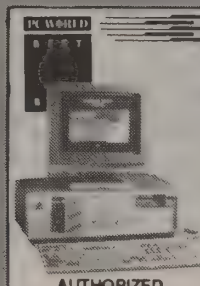

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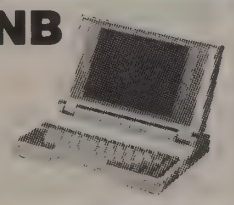

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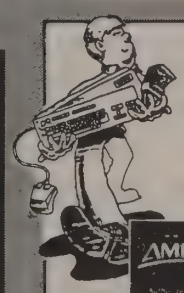

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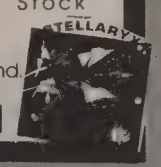

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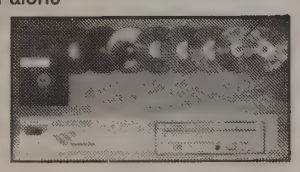

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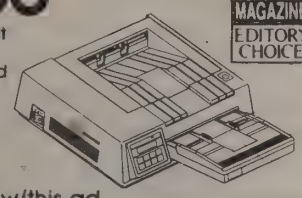

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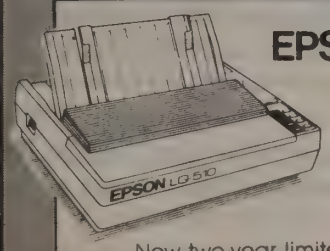

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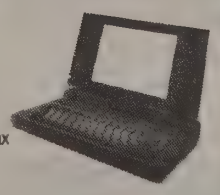

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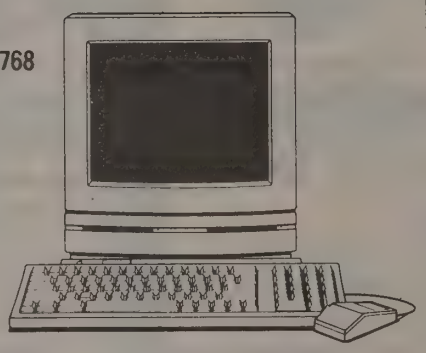

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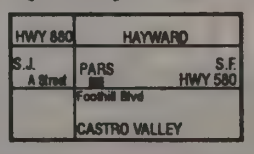

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program is organized so the beginner can use a few of the most widely followed tools.

The program is organized like a tree, with the beginner being exposed first to the outside rings; then, after working further into the program, encountering more advanced techniques. The program also is particularly good at setting up "what if" situations, so you can create hypothetical portfolios and then try different trading strategies to see what works for you.

MetaStock does not include downloading software, so unless you purchase The Downloader, which sells for $195, you are restricted to manual entry of data. You can begin by purchasing their demo disk for $5 and see how you like it. If you find it meets your needs, upgrade to the full program and buy the downloader.

Once you have a modem and are using the program, you might consider checking in on their conference on CompuServe. In that forum, hundreds of MetaStock users exchange ideas, strategies, and customized applications of MetaStock. Of all the programs, this is probably the most widely used, with estimates ranging to the fifteen thousand mark. In addition, there are MetaStock user groups located throughout the United States. MetaStock also provides a list of download services in foreign countries that will provide you with market data for that country's exchange, if you're using MetaStock abroad.

One MetaStock user I spoke with is a professional trader who tracks more than four hundred stocks on his Toshiba 1600 portable so he can follow his investments when he's at home or on the road. He says that the program does a great job. His download fees go as high as a hundred dollars a month, although most users track fewer issues and end up with a monthly download bill of between thirty-five and fifty dollars.

MARKETEXPERT/STOCKEXPERT

Market analysts readily agree that about 60% of any stock's movement is determined by the direction of the market itself. If the general market is moving upward, you have a better chance of participating in an upward movement of any individual stock. Accordingly, there are a number of computer programs that analyze technical market data of the broad market in order to predict the trend of the market. Although Equis has such a program, The Technician, which allows you to download general market data on a daily basis from their own database, I examined AIQ's MarketExpert, which sells for $488, with a thirty-one-day trial version available for $44. This program downloads its data from Dial Data, a huge database which provides information on the market in general as well as individual issues. The connection charges for Dial Data range from a cent per quote to three cents, depending upon the amount of data you download. Other services, such as Warner Computer Systems, charge comparable rates—although each service has a slightly different fee schedule. You should check several out to see which one will work best for your needs.

AIQ provides twenty years of market data, so you can check out for yourself just how accurate their indicators have been. While the program has given indicators that would have saved you from the 1987 meltdown, they have also provided guidelines that would have had you switching in and out of the market too frequently for my taste.

They have another program, however, which I really like. AIQ StockExpert, selling for $988, with a $44 thirty-one-day trial package, combines artificial intelligence with a number of technical analysis tools to offer clear buy and sell recommendations on individual stocks. The program downloads data on the stocks you follow from Dial Data, Warner, or any of several other databases. When you buy any of these programs, they provide you information on how to sub-

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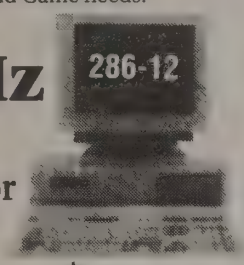

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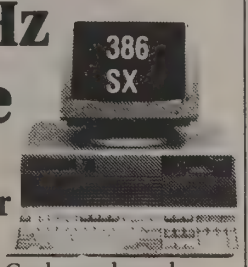

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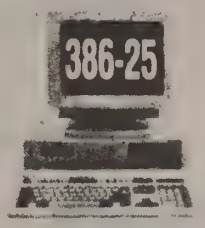

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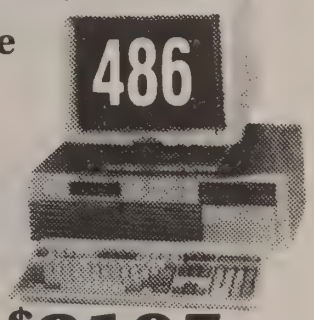

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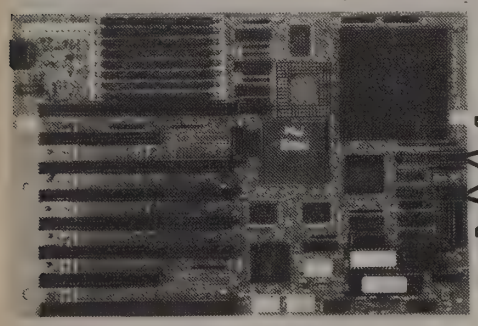

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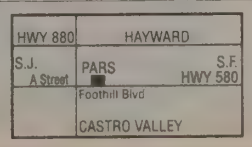

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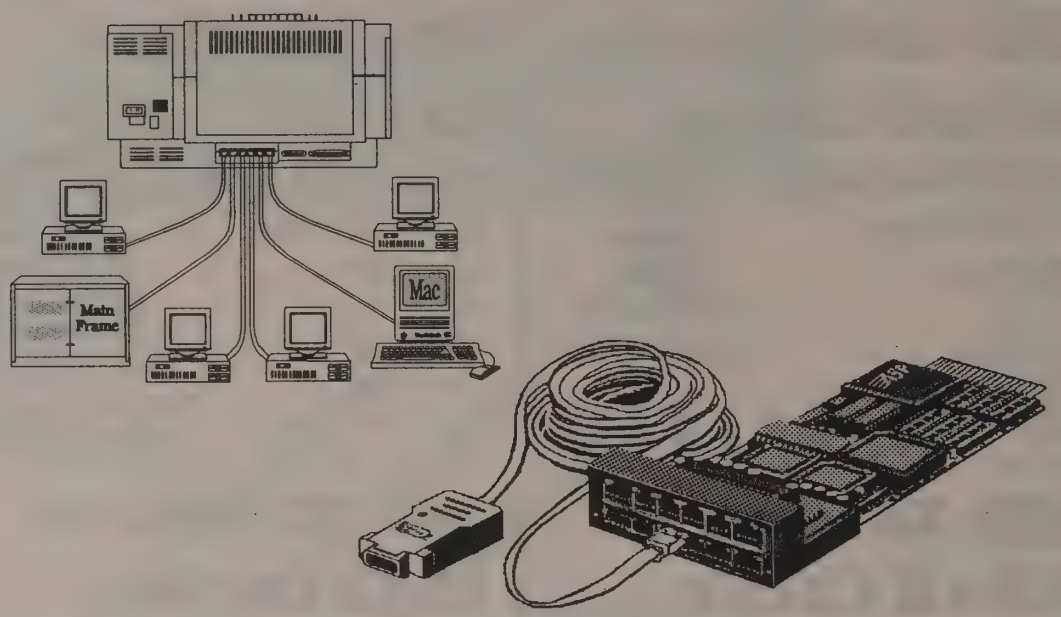

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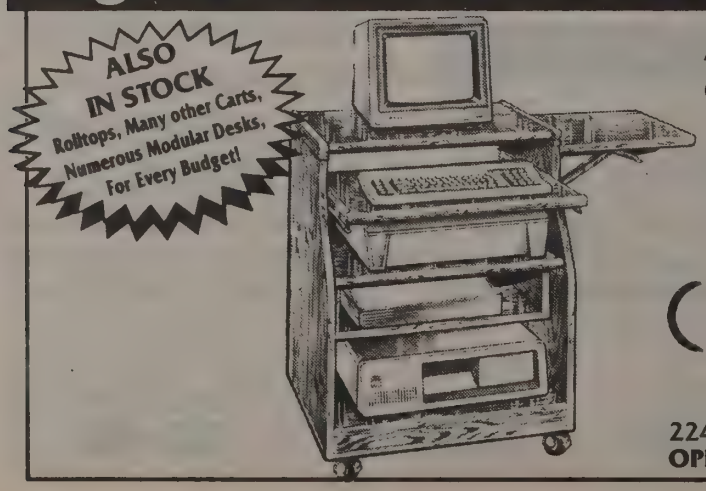

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scribe and connect to databases that can supply you with the raw data the program requires.

StockExpert analyzes the data using twenty-five technical analysis tools and combines these indicators into a final recommendation on the prospects for each individual stock you track. AIQ recommends that you keep a minimum of one to two years of data in your files. This provides enough data so that the program can see trends for earlier dates as well as the current date. This allows you to look at things like two-hundred-day moving averages and play "what if" games to see how you and the system would have worked using past data.

The thing I like so much about this program is that, while it combines the twenty-five tools, you can look at any of the component indicators in detail. When a strong up or down indicator is present, you can press the question mark key to learn why the system reached this conclusion. Rather than analyze an individual stock using multiple tools, AIQ combines all of the indicators into a single recommendation. AIQ Systems publishes a sample portfolio so you can see how they have done over several years. The results are impressive.

While the price tag is higher than some of the other packages available, the results may be more impressive. About 30% of AIQ's users are professionals. The package contains a lot of tools besides the basic analysis elements. A stop loss feature, for instance, alerts you when it is time to sell stocks. The rules determining when to sell are set up by the user to ensure that losses are minimized and profits are allowed to run until they retrace a percentage of their gain.

AIQ claims a devoted group of users. One that I spoke with is an airline pilot who carries a Zenith SupersPort 286 with a math coprocessor. He uses both MarketExpert and StockExpert on the road and says his results have been fantastic, with 70–80% of his trades showing a profit. Although his desktop machine has color and all of the bells and whistles, he prefers to work on the Zenith because he claims there's less eye strain when he works many hours.

CONCLUSION

I have indicated only a fraction of the financial programs on the market, trying to highlight those that seem most worthwhile to examine. For the investor on the go, using these programs on a portable allows you to keep track of your investments and stay abreast of the market from wherever you happen to be. ■

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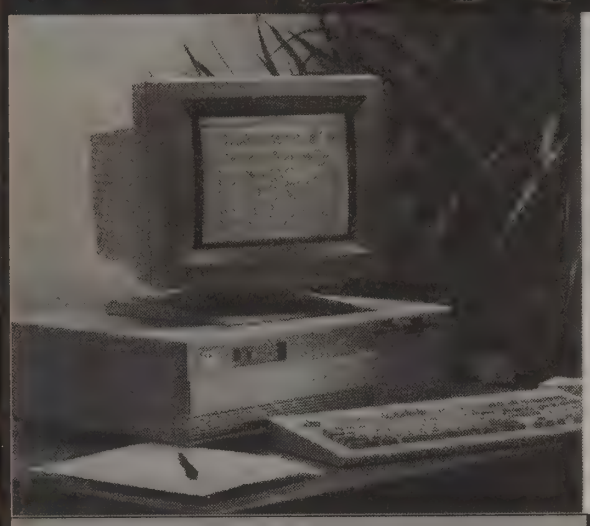

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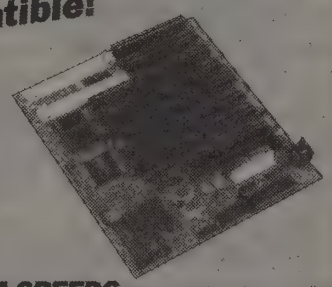

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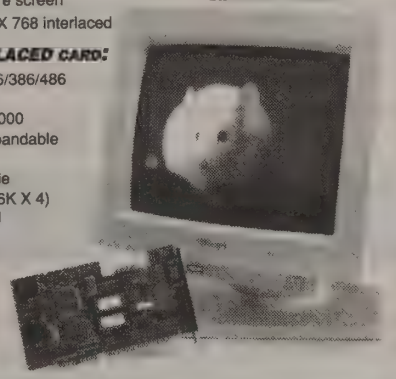

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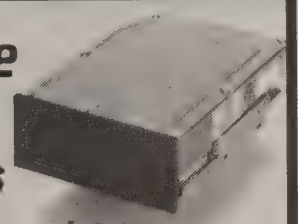

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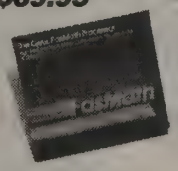

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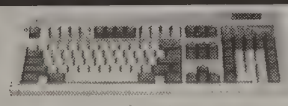

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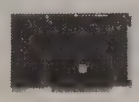

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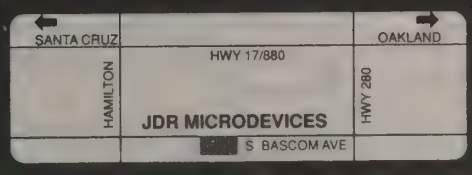

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Help For The System Manager

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BY WAYNE A. YACCO

"Abandon hope all ye who enter here."

Dante must have been thinking about some poor network manager with a crashed hard disk on the server. Although there are a number of software products on the market that can resurrect all but the hopelessly dead, anyone who's had to reformat a hard disk without documentation knows how frustrating it can be.

VARs and other dealers often install systems without providing the documents you'll later need to support the hardware yourself. It's not necessarily because VARs want to keep their customers dependent; it's usually because the OEM versions they buy—to keep their costs down—don't come with much support. They're intended only for the system integrator.

Lamentably, your low-level formating software will not be sympathetic. It requires a lottery full of random numbers: cylinders, heads, sectors, landing zone, and the ever-incomprehensible write-precompensation and reduced-write-current cylinders.

LOCAL AREA NETWORKS

Now there's help from Douglas T. Anderson. His *Hard Disk Technical Guide* ($49.95 from PCS Publications) has specifications for just about every drive ever made: from an old 5MB Shugart SA 1002 to the latest Priam ID 330E. It's published in a three-ring binder so it can be updated, and the March '91 update has just shipped for $9.95.

The book also has jumper settings for fifty of the more common drive controllers—including illustrations. Anderson plans to revise the book by splitting off the controller section into a separate publication sometime soon. The new controller book will have as close to an exhaustive list of boards as he can come up with, and the drive book will have jumper settings and PC-board illustrations added.

Sounds just like hard-disk heaven. I think including terminating-resistor values, and a section on floppy-drive jumpers would be handy too.

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Novell NetWare is the dominant product in departmental networking, the system of choice for more networks than any other contender. Yet many criticize it as being difficult to install and manage. There's some truth to this, but it's because NetWare is a comprehensive system. When there's so much of something, it's inevitably difficult to grasp.

NetWare offers one advantage, however, that the smaller, simpler networks don't: Novell training. That's a real plus, since many network requirements are just too complex to be satisfied by a simple solution. If you've got to deal with complexity, it's good to know that there are substantial resources available to help.

Novell's training is available in classrooms—at their education centers, for instance. If that's not convenient, their interactive software series offers an attractive alternative. There are custom versions for each flavor of NetWare too: ELS, 2.1x, and 386. Each allows you to train yourself or a workforce on an individual basis, whenever there's a minute in the schedule.

You can use these courses to learn everything from the basics of telecommunications to network management for Novell NetWare. You may already have seen these courses and dismissed them, if you just want to learn Novell commands, logon procedures, and such. The courses that cover this material are titled "NetWare System Supervisor." That sounds very advanced, so you may not have realized that they include topics for supervisors, users, dealers, and technicians.

The basic course is different from the courses that cover NetWare. It teaches communications principles from a book and uses the computer solely for testing and solving case studies. The cases are, surprisingly, not biased toward LAN solutions. The NetWare courses are single- or multiuser, and will work either standalone or on a network. They are graphical, interactive tutorials, and offer some programmed instruction.

Programmed instruction gives you control over the pace at which you learn and allows you to return to tutorial material that you find difficult in the self tests. They could be better, but they're not bad. Some features might remind you of those obnoxious demos that ask you to type an answer and won't let you skip to the next part until you do. The graphics are also very slow.

However, the courses are thorough. The 386 course requires nearly 7MB of disk space just for Part I, and it's very good. With an improved presentation engine, it would be excellent.

Continued on page 244

VARs and other dealers often install systems without providing the documents you'll later need to support the hardware yourself. It's usually because the OEM versions they buy—to keep their costs down—don't come with much support. They're intended only for the system integrator.

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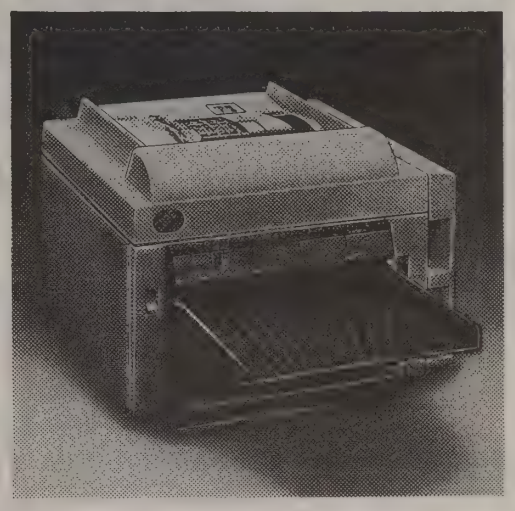

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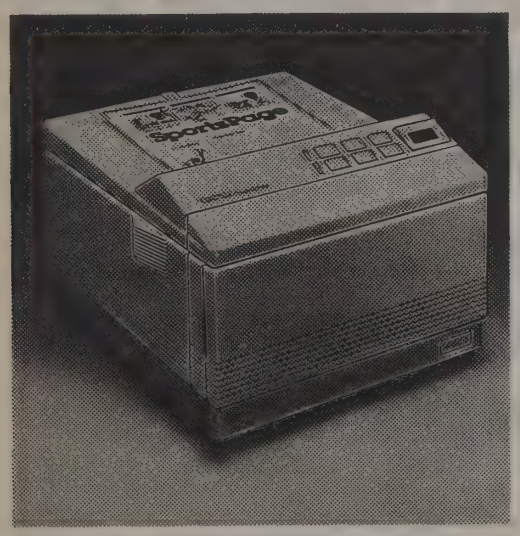

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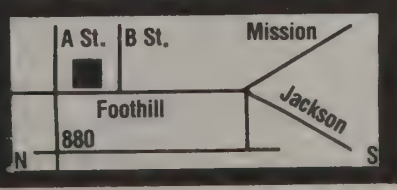

Dr. Frankenstein's Benchmarks

Three Very Different Workstations From IBM, Sun, And NeXT

BY BENNETT FALK

UNIX

These benchmarks are not scientific. In fact, they are, more than anything else, an act of terrorism.

I set out to benchmark three machines that seemed interesting and about which I knew practically nothing. The machines in question are an IBM RS/6000 running AIX, a Sun SLC running version 4.1.1 of Sun's UNIX operating system, and a NeXT that had recently been upgraded to a 68040 CPU.

The idea that a single suite of benchmarks could be used to measure the performance of such disparate pieces of hardware is vaguely outlandish. The ability to do this at all stems from the fact that UNIX provides a more or less homogeneous interface to measure performance on these machines.

The benchmarks used are a modified version of the test suite first published by David Hinnant in *Byte Magazine* in 1983. Tables 1-4 below show the average times for ten iterations of the whole test suite. The tests were also run on a 16MHz 80386 machine with SCO UNIX 3.2.2, and these results are included for comparison with the performance figures of the SLC, RS/6000, and NeXT.

The tests that were run fall into four categories. The CPU-intensive tests measure speed of computation ("sieve"), system call efficiency ("scall"), looping efficiency ("loop"), and the overhead involved in using function calls ("fcalle") in place of simple assignments ("fcalla"). The disk-intensive tests measure disk read ("dread"), disk write ("dwrite"), and pipe throughput ("pipes"). The "shell" test measures the system's multiuser capacity by running up to six concurrent sessions. Finally, the time required to compile the C source code for the other tests is included as a general measure of compiler efficiency.

Another point of interest is similarity of performance between the NeXT and the SLC. The machines seem evenly matched in CPU tests and multiuser tests. The NeXT seems to have a slight advantage in the disk tests and a more significant advantage in the compilation tests.

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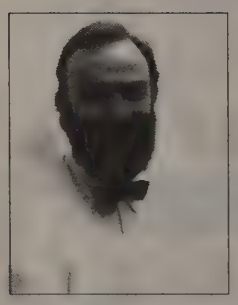

Copyright © 1991 by Bennett Falk. All rights reserved. *Bennett Falk lives in the Bay Area, writes when he can, and hopes for the best. He works for Sybase, but the opinions and attitudes expressed are his own.*

None of the machines tested belongs to me, and I don't even have promotional literature about them. What I know about these machines is just what I could learn from logging in and looking around and finding out whatever their owners happened to know. This, unfortunately, is not much.

How UNIX reports the hardware configuration is left up to the vendor. For Sun and NeXT, this is a matter of reading through the boot-up messages. For the RS/6000, there is a utility that reports what hardware is installed.

The machines don't have much in common. The SLC is Sun's low-end, purple-monopod workstation featuring a SPARC processor running at 25MHz The messages from booting UNIX (see the file /usr/adm/messages) indicated that the SLC had a SCSI disk and 8MB of RAM. The NeXT is a not-so-low-end machine, but modestly configured. There was no record of the last system boot, but the owner assured me that the machine had a processor speed of 25MHz, a SCSI disk, and 8MB memory.

The RS/6000 tested is used as a file server and not primarily as a desktop workstation, and consequently it has a considerably more generous configuration: 64MB of RAM and three SCSI disks. (AIX uses the command "lscfg" to list the hardware configuration.) The RS/6000's processor is proprietary, and the machine's owner, when pressed for information about the speed of the processor, couldn't say ("IBM's really quiet about that sort of thing.").

The tests show the RS/6000 to be a monstrously powerful machine. The loop and sieve tests show the CPU off to good advantage (the sub-second time on sieve test is particularly impressive). The function call overhead is marginally greater than that of the NeXT, and system calls are slightly more expensive than their counterparts on the NeXT, but these low-level differences don't seem to be a hindrance to the machine's performance.

The RS/6000 also performs well on the disk read (dread) and disk write (dwrite) tests. Its performance on the pipe test was not quite as robust.

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The RS/6000's multiuser performance is nothing short of amazing. Undoubtedly some of its advantage in these tests comes from the volume of physical memory installed, but even the single-user run of the shell test (which should run comfortably in very little memory) showed superb performance.

The RS/6000's multiuser performance is nothing short of amazing. Undoubtedly some of its advantage comes from the volume of physical memory installed in the machine we used, but even the single-user run of the shell test (which should run comfortably in very little memory) showed superb performance.

The only mystery among the test results concerns the speed of compilation for C programs. The RS/6000's times are not bad, but after the initial compilation of the dwrite program, the NeXT posted slightly better times on all other compilations.

Another point of interest is similarity of performance between the NeXT and the SLC. At least for these two machines, it's difficult to discern any advantage to RISC technology (the SLC is a RISC-based machine; the NeXT's 68040 is still a CISC architecture.) The machines seem evenly matched in CPU tests and multiuser tests. The NeXT seems to have a slight advantage in the disk tests and a more significant advantage in the compilation tests.

Finally, the ancient 16MHz 80386 seems not quite as ready for the scrap heap as one might have expected. It certainly does not perform well on the CPU-intensive sieve test. But its performance on compilations is generally not as far behind the other machines as one might have expected, and its multiuser performance is quite good. ■

Continued on page 53

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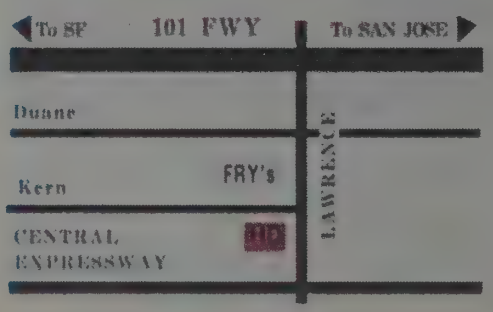

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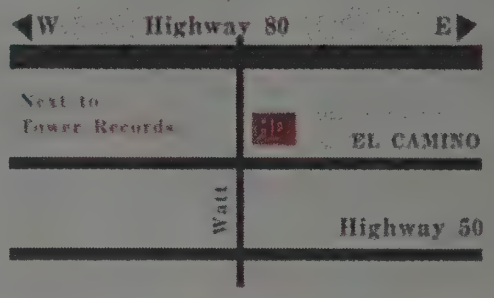

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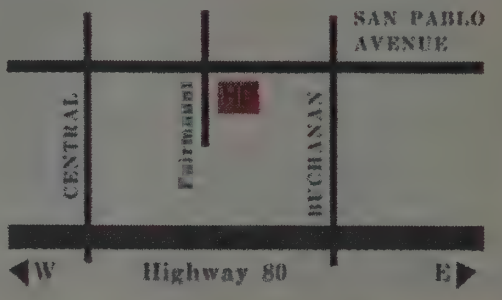

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Continued from page 48

TABLE 1: CPU-INTENSIVE TESTS

	80386 16MHz 6MB	SLC 25MHz 8MB	NeXT 25MHz 8MB	RS/6000 64MB
Executing fcalle				
	0.32	0.1	0.04	0.07
	0.2	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Executing fcalla				
	0.12	0.0	0.0	0.01
	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Function Call Overhead				
	0.2	0.1	.04	.06
Executing loop				
	1.91	0.2	0.2	0.11
	1.8	0.1	0.11	0.09
	0.04	0.0	0.0	0.0
Executing scall				
	3.04	0.97	0.43	0.47
	0.32	0.14	0.0	0.14
	2.65	0.81	0.38	0.24
Executing sieve (100 iterations 1899 primes.)				
	10.42	1.42	1.45	0.8
	10.28	1.3	1.3	0.7
	0.03	0.02	0.01	0.0

TABLE 2: DISK-INTENSIVE TESTS

	80386 16MHz 6MB	SLC 25MHz 8MB	NeXT 25MHz 8MB	RS/6000 64MB
Executing dwrite				
	0.5	0.73	0.53	0.1
	0.0	0.0	0.0	0.0
	0.24	0.2	0.1	0.0
Executing dread				
	0.35	0.2	0.33	0.15
	0.0	0.0	0.0	0.0
	0.26	0.1	0.19	0.0
Executing pipes				
	1.28	0.71	0.51	0.73
	0.0	0.0	0.0	0.0
	0.62	0.37	0.22	0.29

TABLE 3: MULTIUSER TESTS

	80386 16MHz 6MB	SLC 25MHz 8MB	NeXT 25MHz 8MB	RS/6000 64MB
Shell 1				
	1.83	1.84	1.44	0.66
	0.1	0.07	0.0	0.09
	0.58	0.51	0.33	0.11
Shell 2				
	2.66	3.11	3.1	1.08
	0.19	0.17	0.01	0.14
	1.11	1.04	0.7	0.29
Shell 3				
	3.76	4.95	3.77	1.6
	0.34	0.3	0.01	0.27
	1.62	1.56	1.08	0.44
Shell 4				
	4.59	6.08	6.31	2.07
	0.43	0.39	0.06	0.32
	2.29	2.07	1.43	0.65
Shell 5				
	5.74	7.08	6.98	2.8
	0.6	0.5	0.07	0.41
	2.9	2.67	1.8	0.8
Shell 6				
	6.71	8.89	8.86	3.27
	0.68	0.62	0.1	0.54
	3.6	3.21	2.19	0.96

TABLE 4: COMPILER TEST

	80386 16MHz 6MB	SLC 25MHz 8MB	NeXT 25MHz 8MB	RS/6000 64MB
Compiling dwrite.c				
	4.1	3.44	3.06	2.0
	1.14	0.52	0.29	1.58
	1.18	1.04	0.39	0.25
Compiling dread.c				
	3.45	3.2	1.49	2.08
	1.17	0.56	0.3	1.6
	1.15	1.03	0.41	0.27
Compiling fcalle.c				
	2.6	2.8	1.06	1.3
	0.54	0.4	0.13	0.96
	0.86	0.99	0.36	0.19
Compiling fcalla.c				
	2.58	2.72	0.97	1.23
	0.45	0.36	0.11	0.87
	0.84	0.97	0.36	0.2
Compiling loop.c				
	2.92	2.64	1.08	1.29
	0.57	0.39	0.13	0.88
	0.98	0.97	0.34	0.18
Compiling pipes.c				
	3.16	2.92	1.64	1.5
	0.86	0.54	0.22	1.16
	1.02	0.97	0.35	0.2
Compiling scall.c				
	2.51	2.73	1.21	1.26
	0.41	0.35	0.12	0.88
	0.82	1.03	0.33	0.2
Compiling sieve.c				
	3.29	3.2	1.09	1.56
	0.96	0.67	0.19	1.13
	0.9	1.01	0.35	0.19

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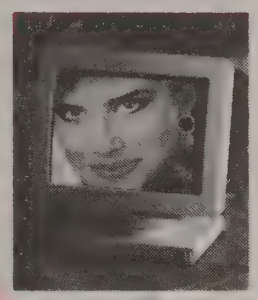

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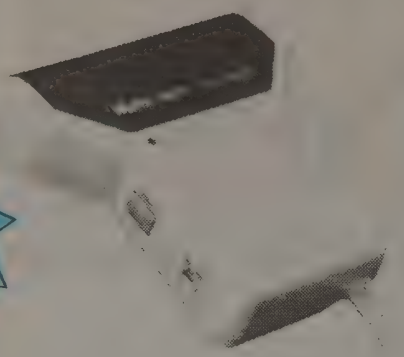

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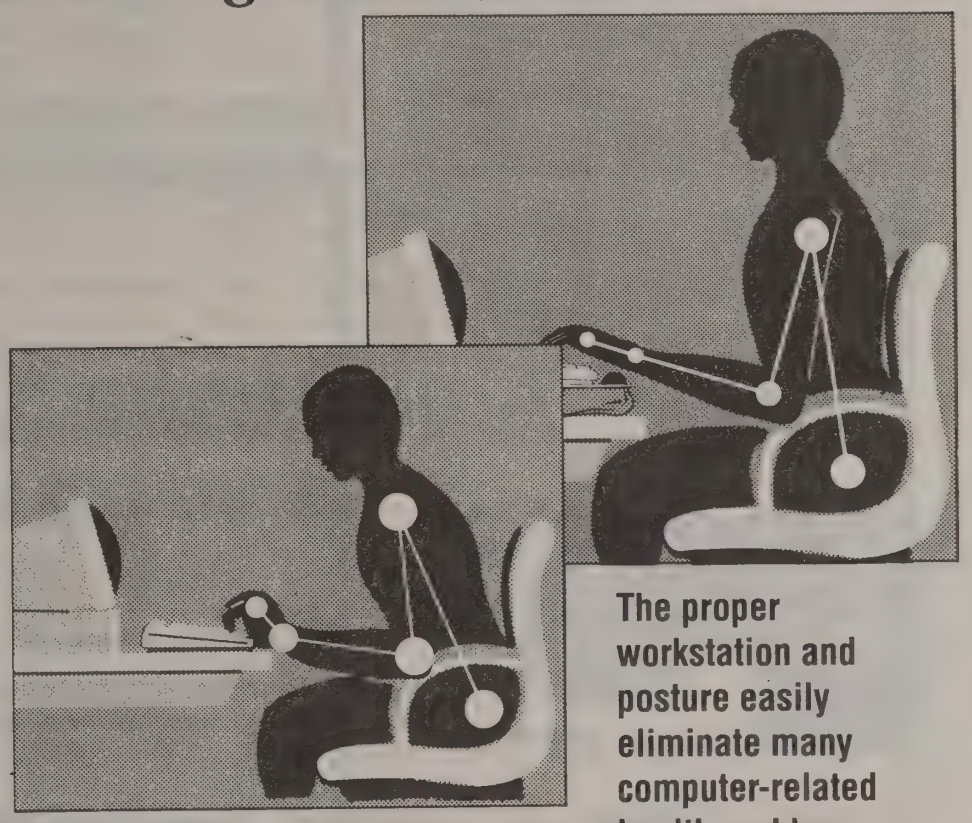
Safe Computing

Ergonomics, Computer Legislation, And Work

BY MICHAEL ROBIN

In December 1990, San Francisco became the first city in the country to pass a law addressing the health and safety of video display terminals (VDT) users. Many business leaders, high-tech industry experts, and workers see this as just the beginning of a trend that will make computer-related health concerns a major issue throughout the 1990s.

As the use of computers has proliferated, so have health problems. Office workers, data processors, and others are increasingly experiencing injuries to eyes, wrists, shoulders, and neck caused by working at a computer for extended periods of time. Computer-related health problems are now one of the most common on-the-job injuries in the US. Such disorders, according to Samantha Greenberg, founder of the Computer Injury Network, affect five million people in the US each year, at a cost to industry of upwards of $10 billion.



The proper workstation and posture easily eliminate many computer-related health problems

Getting Your Office Into Compliance With New And Proposed Ordinances

In 1990, California Gov. Deukmejian vetoed Senate Bill 955, which would have passed a stringent VDT worker safety law. Cities and counties have begun to act in the absence of state or federal action.

The first local action was taken by the San Francisco Board of Supervisors. This VDT safety ordinance states that the workstation "shall conform to the provisions of the American National Standard for Human Factors Engineering of Visual Display Terminal Workstations, ANSI/HFS Standard No. 100-1988."

The ordinance applies to all VDT operators regularly working four hours or more a day at companies employing fifteen or more employees. The proper workstation includes:

- Adjustable chairs;
- Adjustable terminals (move up/down, tilt right/left), or articulated arms, or platform lift systems;
- Upon request of operator: glare screens, wrist rests, and document holders.

In addition, employees must be provided with information on VDT health and safety concerns, and training on supplied ergonomic equipment. The ordinance seeks to ensure that workers take adequate breaks from repetitive keyboard work. The ordinance also addresses direct noise from impact printers to minimize the disturbance to communications and the arrangement of lights to avoid visual glare and discomfort,.

Following San Francisco's lead, Los Angeles City Councilman Zev Yaroslavsky introduced a motion "that the City Attorney (of Los Angeles) be instructed to prepare an ordinance regulating video display terminals in public and private workplaces within the city, similar to that adopted by the San Francisco Board of Supervisors, and consistent with the city's powers to regulate in this area."

There are currently five bills being discussed in the California State Legislature. These proposals address a wide range of computer-related health issues, from the adoption of the ANSI (American National Standards Institute) recommendations, the establishment of a state ergonomics program to collect data, and continued research to create standards for safe levels of exposure to radiation from monitors (see Pending Legislation box). Whatever the final outcome of proposals in Los Angeles and Sacramento, one thing is certain: the concern is here to stay and regulations are following close behind.

COMPUTER-RELATED INJURIES

VDT safety encompasses more than the monitors themselves. Factors such as poorly designed keyboards and furniture, poor lighting and ventilation, and physical stress are significant contributors to "computer sickness." Safety concerns fall into two general categories. The first focuses on issues of ergonomics: looking at the design of desktop computers and the environment we work in. The second category relates to potential health hazards from emissions released by monitors.

The first category includes repetitive stress injuries (RSIs) and cumulative trauma disorders (CTDs). These disorders, generally, and Carpal Tunnel Syndrome in particular, are

widespread in the US. Recently, the US Dept. of Labor cited Carpal Tunnel Syndrome, as well as other CTDs, as the cause of 48% of all industrial disorders.

RSIs are not new; they have been almost common workplace injuries long before computers were invented. Any work involving repetitive motions is liable to these injuries—from seamstresses and assembly line workers to musicians and meatpackers. Carpal Tunnel Syndrome, perhaps the most well known disorder in this category, is an injury caused by repeatedly performing stressful motions of the hand and holding the hand in a static position for long periods of time. At the onset of the disorder, you may feel pain, tenderness, swelling, redness, tingling, and warmth in the affected area. If undetected and untreated, the compression of the median nerve causes damage. Muscles begin to deteriorate; the hand loses its grip and can become partially crippled. In advanced cases, Carpal Tunnel Syndrome can be irreversible.

Workstation design can contribute to eyestrain and headaches as well as inflammation of muscles, joints, and tendons in the wrists, hands, neck, back, arms, and legs. When desks are at an incorrect height stress is accentuated throughout the wrists, arms, and neck. Improper leg room limits leg movement and thus circulation. In some cases, these problems may be disabling.

Many of these problems can be prevented with proper attention to job design, workstation design, and posture. Ergonomic intervention, the term describing many of the ways to prevent this category of disorders, is fast becoming a regular feature of corporate safety programs.

Many of these problems can be prevented with proper attention to job design, workstation design, and posture. Ergonomic intervention is fast becoming a regular feature of corporate safety programs.

The second category, and one of the most hotly debated issues about the safety of computers, examines electromagnetic radiation that computer terminals emit. There are two kinds of electromagnetic fields generated by computer monitors: VLF (very low frequency) and ELF (extremely low frequency). VLF emissions are generated by the horizontal scan on the monitor and potential miscarriage is the major concern associated with these emissions. ELF emissions, generated by the vertical scan, are linked to pos-

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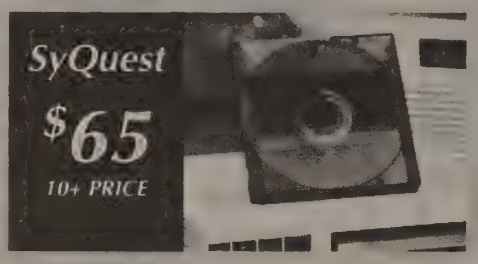

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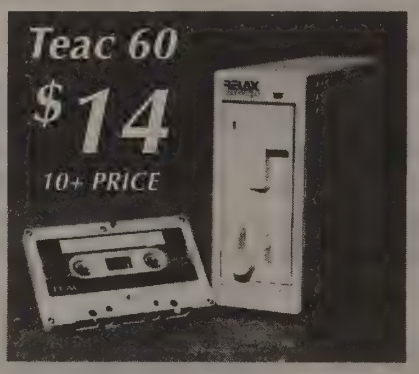

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Logitech, Inc., 6505 Kaiser Dr., Fremont, CA 94555. (415)795-8500.

MicroComputer Accessories, Inc., 5405 Jandy Pl., PO Box 66911, Los Angeles, CA 90066-0911. (213)301-9400, 1-800-521-8270.

NoRad Corp., 1549 11th St., Santa Monica, CA 90401. (213)395-0800. 1-800-262-3260.

Optical Coating Laboratory, Inc., 2789 Northpoint Pkwy., Santa Rosa, CA 95407-7397. (707)545-6440, 1-800-545-OCLI.

Visionary Software, Inc., PO Box 69191, Portland, OR 97201. (503)246-6200.

ORGANIZATIONS

Samantha Greenberg, Computer Injury Network, 11939 Gorham Ave., Suite 109, Los Angeles, CA 90049. (213)207-1653.

VDT Coalition, c/o SEIU Local 790, 522 Grand Ave., Oakland, CA 94610. (415)465-0120.

American Physical Therapy Association, 1111 N. Fairfax St., Alexandria, VA 22314. (703)684-APTA.

Laurel Sharmer, Sr. Health Educator, San Francisco Department of Public Health, 101 Grove St., San Francisco, CA 94102. (415)554-2671.

sible cancer causing effects. In addition to low frequency radiation, VDTs also emit magnetic rays that pose other health hazards. However, currently, there is even less information available examining magnetic radiation.

A common misconception about computer terminal radiation emissions is that they emanate primarily from the front of the computer, through the screen. Many computers emit more radiation from the back and sides. This presents a problem in crowded offices, or those in which desks are arranged so that they face one another. However, most radiation from a computer terminal attenuates quickly over a distance of a few feet. In 1987, the World Health Organization recommended that computer terminals be spaced at least one meter apart—in all directions.

ERGONOMICS & SOLUTIONS

Numerous studies estimate increases in worker productivity associated with safe VDT usage at 15–25%. The San Francisco Board of Supervisors Budget Analyst concluded that the city and private businesses may achieve corresponding salary savings in this range, as well as reductions in the use of sick leave, workers compensation, and disability costs. For example, workers compensation costs from a Carpal Tunnel Syndrome disability claim are estimated to be in excess of $20,000 per case.

Carpal Tunnel Syndrome need not be an occupational risk for employees performing repetitive tasks. Preventative measures such as tool or workstation redesign can prevent or alleviate conditions that can lead to Carpal Tunnel Syndrome or other work-related injuries.

For the first time, high-tech companies are rethinking product design to reduce stress and injuries related to computer use. The challenge for manufacturers is to create office tools that provide a better, more natural fit for the people who use them. For example, Logitech, Inc., has made ergonomics a primary feature in the design of its new MouseMan line of computer mice. Logitech pointing devices are designed for left- and right-handed users, as well as offering two sizes.

A growing list of products are now available to make computer use safer and more comfortable. Many desks available at office furniture stores are designed specifically for computers. These desks are lower than typical desk heights, because it is proven that it is less stressful and thus safer to type on a lower work surface. The higher quality computer desks also accommodate cables and computer accessories.

Monitor support devices range from basic stands that raise the monitor up or down to elaborate arms that allow the monitor to be removed from the work surface and moved forward, backward, up, down, side to side, and tilt and swivel.

MicroComputer Accessories has been making sturdy, ergonomic computer furniture for the complete workstation since 1983. This includes adjustable monitor arms, adjustable foot rests, a StaticClear Dissipator with an LCD display, a copy holder for reading documents while entering data, desks designed to be the proper heights as well as a beveled leading edge providing forearm rest.

Foot rests can ease leg and back stress by allowing a user to adjust the angle of the feet instead of having to place the feet flat on the floor. The Dynamic Footrest Massager, from ERGO-NOMIC, Inc., elevates your feet and lets you rock your feet to improve circulation, but also can flip over for a foot massage.

Shields for monitors are becoming increasingly popular. In addition to reducing radiation emissions towards users, placing the shield over the front of the computer screen has other beneficial effects. The grey background of most monochrome screens look blacker when viewed through the mesh, increasing the contrast and clarity of the text. The grounded shield also eliminates glare and static. Users need to be aware that the effectiveness of some computer screen guards deteriorate over time, and they need to be replaced periodically.

NoRad Corp. and Optical Coating Laboratory products include monitor shields providing broad spectrum electromagnetic radiation (EMR) attenuation: better than 99.99% of the entire E-field (electrical), including ELF and VLF, and better than 50% of the H-field (magnetic) above 30kHz. Monitor shields also eliminate static buildup and the discharge of dust towards the user.

ERGONOMICS AT THE KEYBOARD

In a recent paper, *Tips for Beating the Malady of the Information Age*, the American Physical Therapy Association discusses how to avoid many of the computer-related injuries associated with ergonomics. The authors point out that:

Good keyboard techniques begin with good posture, Typing materials should be eye level so that you don't have to bend your neck over your work. Sit with the spine against the back of the chair, shoulders relaxed, elbows along the sides of the body, and wrists straight.

When using a keyboard or typewriter, move only the fingers. Press keys with minimum pressure necessary. Make sure keyboards are kept clean and in good working order to minimize resistance. If your keyboard has a pad at the bottom, use it to rest your wrists during breaks.

It also includes exercises VDT users should practice before beginning a typing job and during breaks throughout the day. Take time for the following stretching exercises:

- Rest the forearm on the edge of a table. Grasp the fingers of one hand with the other and gently bend back the wrist, stretching the hands and wrist. Hold for five seconds.
- Gently press the hand against a firm, flat surface, stretching the fingers and wrist. Hold for five seconds.
- Strengthen the muscles along the wrist with the following isometric exercises: Make a loose fist, palm up, and use the other hand to gently press down against the clenched hand. Resist the force with the closed hand for five seconds. Keep the wrist straight; with the palm up, the palm down, and with the thumb side of the wrist up. With the fist down, press against the knuckles of the closed hand. Resist for five seconds in each position. Repeat series five times. Clench fist tightly, then release, fanning out fingers. Repeat five times.

Other safety recommendations examine the way we work:

Your typing table should be slightly higher than your elbows when arms are held relaxed by your sides.

Move your entire hand to press hard-to-reach-keys rather than forcing the hand into awkward positions. Use two hands if necessary to execute combination keystrokes, such as shifting to upper case.

Break up typing tasks with other activities such as proofreading, filing, or telephone work to give fatigued muscle groups a rest.

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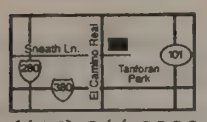

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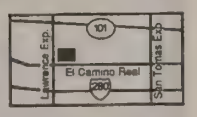

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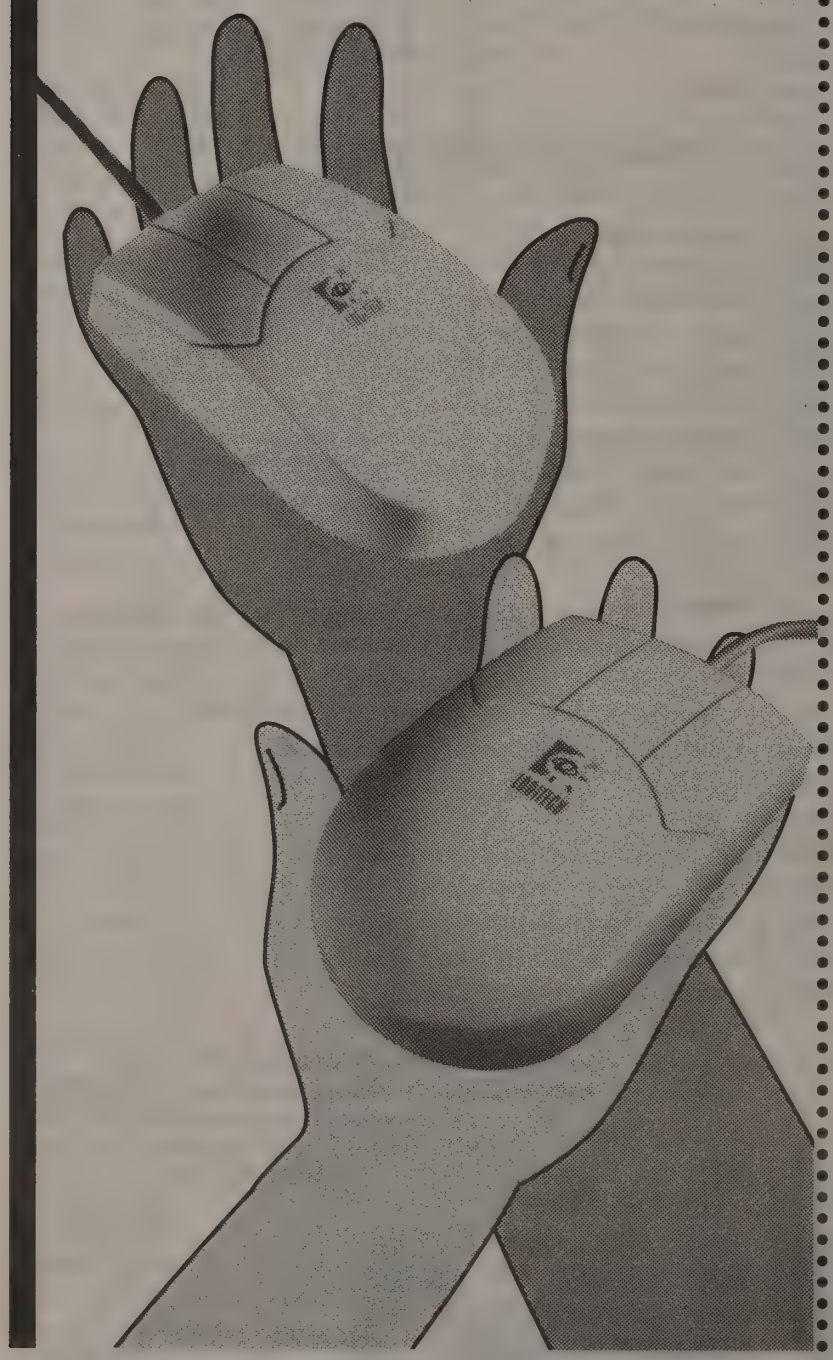

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PENDING CALIFORNIA STATE LEGISLATION

AB 2122 - Assemblyman Freedman

Establish an ergonomics program in the Dept. of Health Services to collect data, monitor, and serve as a resource. It affects all workplaces, is non-enforcement.

AB 2110 - Assemblyman Freedman

Building on the San Francisco ordinance, but a bit stronger. Addresses all businesses, requires employer to provide eye exams, stipulates the distance from computer displays, and provides for transfer or leave of absence for pregnancy.

AB 644 - Assemblyman Hayden

This bill would require compliance with standards adapted by ANSI.

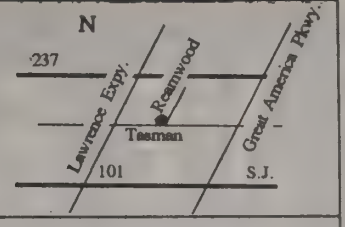
AB 2104 - Assemblyman Bane

Calls on Cal/OSHA to review existing studies and create standards for "safe levels of exposure to radiation emitted by video display terminals, including personal computer screens and all other computer display monitors."

SB 920 - Senator Rosenthal

This bill would require the Public Utilities Commission and Department of Energy to conduct research and education to identify and mitigate health risks associated with exposure to electromagnetic fields.

The Super Link



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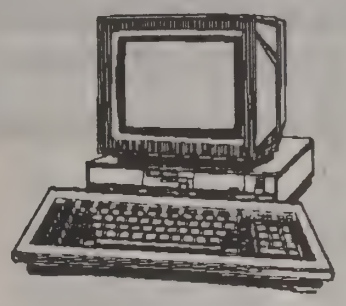

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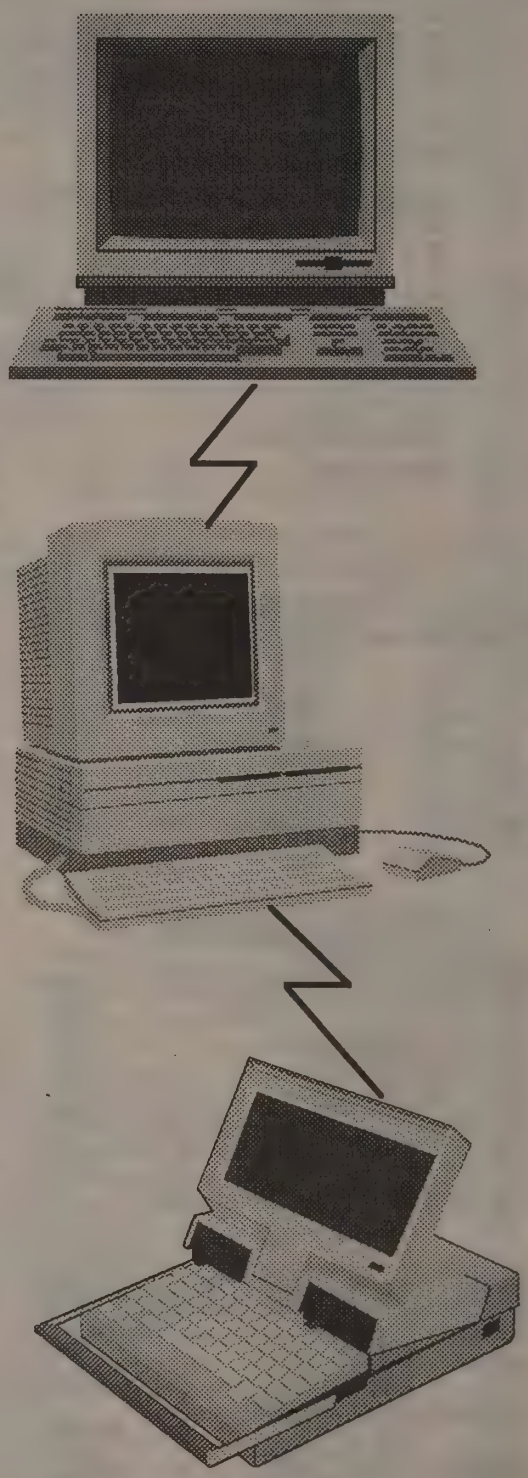

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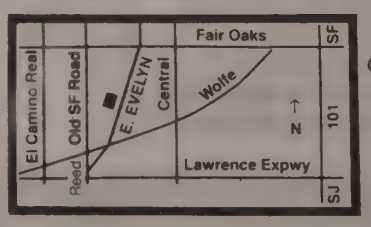

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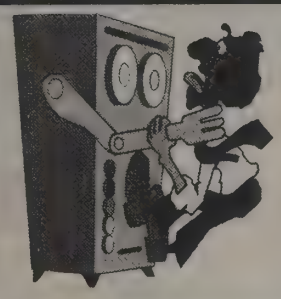

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New Life For "Affordable" PCs

GeoWorks CEO Brian Dougherty Explains Why You Don't Have To Throw Out Your Old PC To Benefit From State-Of-The-Art Technology

By Mary Eisenhart and Lenny Bailes

In the '80s, a small startup called Berkeley Softworks garnered critical and popular acclaim with a package called GEOS, which brought a graphical operating system to the Commodore 64. Later ported to the Apple II, GEOS has served to considerably extend the useful life of both platforms.

Last year Berkeley Softworks changed its name to GeoWorks and, in November, started shipping GeoWorks Ensemble, a windowing operating system for even low-end PCs. Ensemble ran under DOS, included its own multitasking suite of applications, and supported single-tasking of existing DOS applications. It achieved astonishingly sharp, high-quality output on even nine-pin dot matrix printers. It was fast. It was easy to use.

After less than four months, it also carried off top honors at the Software Publishers Association Excellence in Software Awards, winning in the Best New Use of a Computer, Best Consumer Program, Best Personal Productivity/Creativity Program, and Critics Choice/Best Consumer Program categories.

Why the excitement, especially for a fledgling product with, so far, little application support compared to Microsoft Windows? Well, for all its success and marvelous qualities, Windows requires a lot of power. It's happiest with at least a 386 processor and lots of RAM. And, while the corporate knowledge worker has such hardware, there are literally millions of 8086/88 and 80286-based machines to which Windows is pretty much a closed universe. There are also hordes of would-be first-time buyers eyeing those increasingly affordable PC, XT and AT machines—then looking at Windows and Apple's new low-end Macintosh computers, and wondering why they can't get the benefits of a user-friendly interface on something they can afford.

GeoWorks is poised to play a key role in these markets. Though the software is at an early and somewhat limited stage, more applications are under development, and the company's offering an attractive deal to induce developers to write software for the platform. It's also aggressively working on increasing its installed base, and has announced bundling agreements with Samsung, Philips, Everex, Laser, and USIT (which produces The Home Office PC).

Founder and CEO Brian Dougherty, not surprisingly, was in an upbeat frame of mind when we visited the company's headquarters in downtown Berkeley.

You started out running GEOS on the Commodore 64, and later on the Apple II. At some point you seem to have had a paradigm shift. What was the thinking behind that?

We really started looking at the PC as a platform back in 1986. The handwriting was already on the wall that the MS-DOS compatible machines were going to start to get cost-effective enough to be what we called a mass market platform. This was a major different product—we had twenty programmers working for 3 1/2 years on the development of the PC technology.

When we launched the Commodore stuff, it was really as a stepping stone to this product. This product was what we started the company to do. It took us a lot longer to get to the point where we were able to afford to do it. When we launched the Commodore product, we knew that it was already past the peak of its life cycle. We rejuvenated it for a while, and that product line's continued to generate revenue beyond our expectations. We've also found that a lot of our Commodore customers have now upgraded to PCs and are moving along with us.

Obviously you were an early adopter of GUIs, but how do you differentiate your product from all the other GUIs that are out there—Windows, DESQview, Tandy's DeskMate?

When we started the design of this back in '86, Windows wasn't yet successful. We believed that it ultimately was going to be successful, but we also knew what kind of performance it had back then—very seldom does system software performance dramatically improve over time. Usually the companies are trying to do more and it gets bigger and bigger. So we felt there was a real opportunity to do a high performance graphical environment.

The other thing that we were sort of predicting would happen, and I think it's becoming increasingly clear that there's a need for this, is that there would be a segmentation in system software. If you look at the PC market, it's a very young industry. It's less than a decade old. If you look at most other high tech businesses, it's fairly common for there to be a dominant player—almost a monopoly situation at

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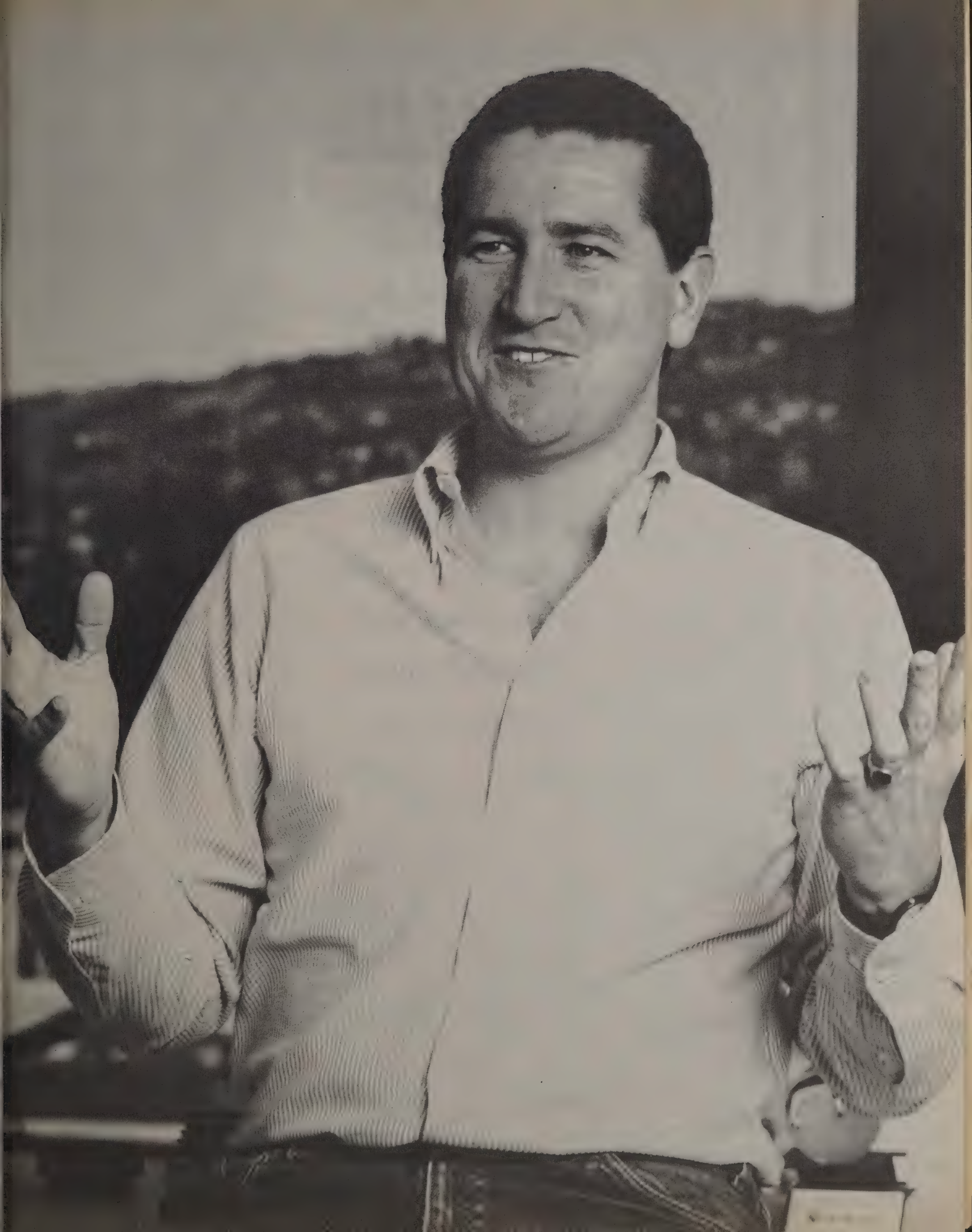

the end of the first decade of an industry. In automobiles, when Ford was the only company with an assembly line, or RCA in the record industry. Similarly, Microsoft got almost 100% market share of system software in the PC market. Apple's a special case, because it's a hardware company/system software combo.

We really believed that as the market continued to expand and grow, there would be an opportunity to provide a superior solution to what we called cost-effective hardware. The market would expand and start to stretch out, and Microsoft would continue to be focused at the very high end.

And if you look at where they're spending their energies, they want to keep UNIX workstations from taking over the high-end corporate desktop, the whole information-at-your-fingertips strategy. That's a very different need than small businesses. Even within corporations, there's lots of people who don't need an information-at-your-fingertips workstation; they do straightforward word processing, maybe some electronic mail.

So we felt that there would be an opportunity to segment the market and provide a superior solution on what we called affordable hardware.

So, while you have obvious appeal for entry-level customers, you don't see yourself as being restricted to entry-level users?

That's correct. If you look at our startup screen, we have done a lot of work and are continuing to do work to make the package ideal for the first-time user. The appliance mode is a first step in that direction—it's for really raw beginners. We hide a lot of computer concepts—there's no file system management in our appliance mode.

But when you go into the professional mode, you're running a full state-of-the-art graphical environment—preemptive multitasking with a PostScript-like imaging engine. Really giving you a lot of the benefits of a high-end workstation on an affordable piece of hardware.

We sort of draw the entire market as a pyramid. At the very top of the pyramid is the high-end corporate knowledge worker. If you look at the PC market historically, back in 1983 that was the only market. I remember we bought our first IBM PC-XT—it was a $6500 machine.

Then you get to '86 and the pyramid starts to get a little bigger, starts stretching down to where you're giving assistants PCs just to do word processing, instead of typewriters. When a PC was a $6500 device, you would never give it to a secretary or an assistant or a clerk for data entry, but by '86 you were getting XT-level machines in around the $2500 range, and the AT was the new high-end corporate knowledge worker machine.

Now today you have 386es and 486es as the $5-10,000 corporate knowledge worker machine, and maybe the R4000 machine that Microsoft's working on with Compaq. So that pyramid is continuing to grow out. As you go down the pyramid and look at the 286es and 386SXes that are now being viewed as sub-Windows platforms, we think that by having a system software platform that can bring some of these high-end capabilities down to those machines, you can massively expand the market. You can make PCs much more useful devices in very large-volume markets, in education and even in corporations.

"We really believed that as the market continued to expand and grow, there would be an opportunity to provide a superior solution to what we called cost-effective hardware. The market would expand and start to stretch out, and Microsoft would continue to be focused at the very high end."

There's a big problem in corporations where, for the top high-end corporate workers, you can absolutely cost-justify just replacing their machines and giving them 486es. But you can't justify replacing every PC in your company.

The receptionist does not need a 486.

Exactly. But you'd like to have the benefits of a standardized graphical interface, and our look and feel is the same as Windows. Motif is basically a derivative of Presentation Manager—IBM and Microsoft donated Presentation Manager to the Open Software Foundation. So we really are essentially the same look and feel as Windows, and it would be nice to be able for the receptionists and the secretaries to be able to benefit from a single training on how user interfaces ought to work.

So we see our role as not just for the entry-level user, but for anybody where you have to be cost-conscious about the workstation that you give that person. We think software continues to move. Five years from now, there's going to be the same issue. There's going to be something very exciting happening on the 986, or whatever the Intel processor is that's out at that time, and our challenge will be to deliver on 486es, which will then be the old, cost-effective machine, some of the same exciting capabilities. To provide as much as possible the state of the art on what the affordable hardware of the day is. That continues to be a moving window.

How big an impediment to you is application compatibility at this point? Ensemble is a self-contained integrated package, and you can run one DOS application at a time, but you can't multitask them. Suppose right now the office has standardized on WordPerfect—what practical limitations are there for bringing GeoWorks into that environment?

I think the most obvious thing—and we're already working on this, it'll be in our next major release—is that we want to let users work in whatever data format they want. So, for example, we've licensed technology that would let a user work in native WordPerfect format, if they wanted, or in Microsoft Word format.

We're building into the system software what we call an import-export library. So that library would make available to any application the ability to import from and write out to several popular applications. The technology that we've licensed so far is to import word processing formats. There's a couple of companies that make word processing and data conversion products. Mastersoft is the company we happen to be working with; they have a product called Word for Word. They've done a lot of work to create what they call a Metafile format, which is a sort of superset of every word processor you could ever imagine, and they have conversion technology that will convert from anybody's format, like WordPerfect or Microsoft or even old WordStar, into their Meta format. Then we write a driver to convert back into the GeoWrite format, and this same library would be available to some other word processing company that might choose to write software for the GeoWorks environment.

So this would be analogous to what I do on the Mac—create the document in MacWrite, which

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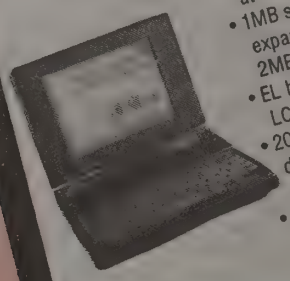

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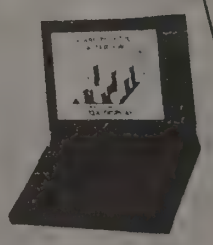

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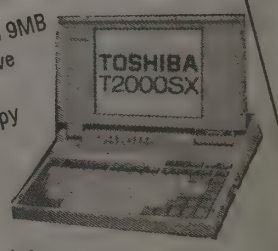

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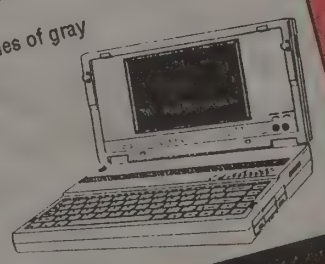

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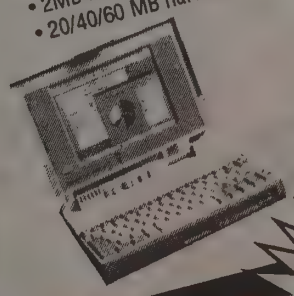

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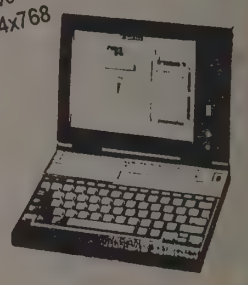

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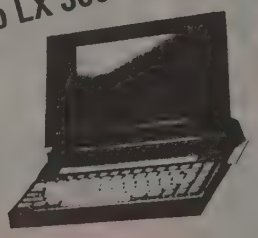

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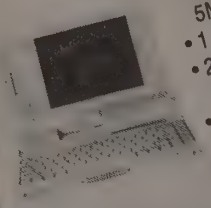

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I like, then save it in Word format because that's what the office standardized on, and the next person works on it in Word.

Exactly. It's exactly the same technology.

How serious is the import feature? Besides vanilla things like bold and italics, what about things like multi-column formats, paragraph controls?

The technology we're licensing is full-fledged. It would support basically everything—full markup information, font information, columns, etc. Of course you do get into a problem where that feature may not be supported in, for example, GeoWrite. GeoWrite is not a full-featured word processor, and while we're improving it for the 2.0 release, it still won't be as full-featured a product as, say, Word for Windows or WordPerfect. So depending on how extensively you're using the word processor, you may lose some formatting information. Like, for example, there's automatic leading to make columns align in WordPerfect. We support columns, so we would be able to bring in the WordPerfect document as a two-column document, but you would lose that automatic leading support.

"For the top high-end corporate workers, you can absolutely cost-justify just replacing their machines and giving them 486es. But you can't justify replacing every PC in your company."

So someone who used all the features in GeoWrite could take that document out and put it in one of the other word processors and get everything that GeoWrite had put into it in the other word processor.

Right. The nice thing about this import-export library approach is that a person can work in this environment regardless of what the company may be standardized on. One of the areas that our technology is really well suited for is portables. Portables often have small hard disks, so they literally can't hold all the data that Windows apps require. Plus Windows so extensively uses the hard disk that the hard disk is almost constantly on on the portable, so it sucks the battery life way down. Whereas a portable with the same amount of memory would run much longer running our product, just because the code's so much smaller, there's not as much hard disk usage.

But you may well be using your portable with our product, but be in a company where you might have a 486 on your desk, and your company might be standardized on Windows. It's very important for us to let you take your data out of that environment, work on the portable with our system, and when you put it back, be able to put it back on whatever the company's standardized on, whether that's Windows or WordPerfect or whatever. So that's what the import-export library will buy us. If you're using very heavily formatted documents, it may not work, but for the bulk of people who tend to be doing fairly straightforward layouts, letters, memos, simple two-column layouts and so on, it would be a very workable solution.

Are you doing similar things with spreadsheets and databases?

Right now our initial plans are that there will be a spreadsheet in the 2.0 release, and that will work with the Lotus WK1 files. That will probably expand in the future also, to include Excel and some of the other spreadsheets.

What about databases?

There'll be some flat-file database capabilities in the spreadsheet that we ship. The engine's being designed to a very nice free-form oriented flat-file database, but that won't be in the 2.0 release. We're currently talking to a number of companies about doing a relational database for the environment.

The other thing that we think is really important—if you look at our niche or what our role in the world would be—we want to get a relational database done for the environment because we can be a total solution for a small business.

But it's not our goal to have this platform be the total basis for corporate-wide computing. We want to be the software running on the cost-effective nodes in the network. Having a front end to a wide range of databases is an even better solution.

Back before 1983, if you go back ten years, you had a mainframe terminal model. The personal computer brought all kinds of great enhancements in terms of better user interface, greater responsiveness for people working locally with a PC. But there's one real drawback if you look at the one-size-fits-all Microsoft approach. Which is if you have to add ten data entry clerks—you're backed up on your data and you're going to hire ten temps—you could, in the mainframe terminal model, buy ten terminals at $500 apiece and fairly inexpensively add that bandwidth. If you have to buy ten information-at-your-fingertips workstations, it's just not a possibility.

So making GeoWorks network-compatible with the major network vendors in the PC world is something you have scheduled?

Right. That will be built into the 2.0 release. We're working on that right now, and obviously Novell is the top vendor. We expect to be able to support a wide range of networks, because again, our goal is to just be a client on the network. We're not trying to do a whole network operating system, we simply want to be one of the clients.

It's hard to run a network on an XT at this point...

(laughs) Yes, it's very difficult. Not to mention the fact that the machines that we're targeting typically don't have the hardware to be the server. But also we don't want to get into competition with people doing network operating systems—we're much more interested in partnership with them.

So you don't have plans to make GeoWorks an operating system? What are your thoughts on the difference between 16-bit and 32-bit operating systems—have you thought about anything like a 386-specific version?

Our 3.0 release will support 386 protected mode, so we'll be a 32-bit operating system. But it still doesn't mean that we necessarily would get into trying to run the network operating system. I think that at some point there will be more and more network support pulled into our operating system, because the network world will go into some kind of peer-to-peer capabilities. That will start to extend somewhat. The crystal ball is very cloudy right now about how that's going to evolve.

We really do view ourselves as a full operating system. We don't feel that all the components of our operating system have to be supplied by us. BIOS is not supplied by anybody's operating system today—it's sort of a separate thing that Phoenix and other people provide. But in a way, a BIOS is part of operating system software.

We view DOS the same way. We view DOS actually more as a part of the BIOS. It isolates us from very low-level disk block accesses, and that's all we use DOS for. All of the rest of the operating system concepts are actually done by our software—multitasking, memory management, serial and parallel stream I/O. Many components that have been traditionally thought of as being managed by an operating system are in fact managed by our software.

The way GeoWorks multitasks is more similar to OS/2 than it is to Windows, isn't it?

That's true. Part of the way we're able to do it is

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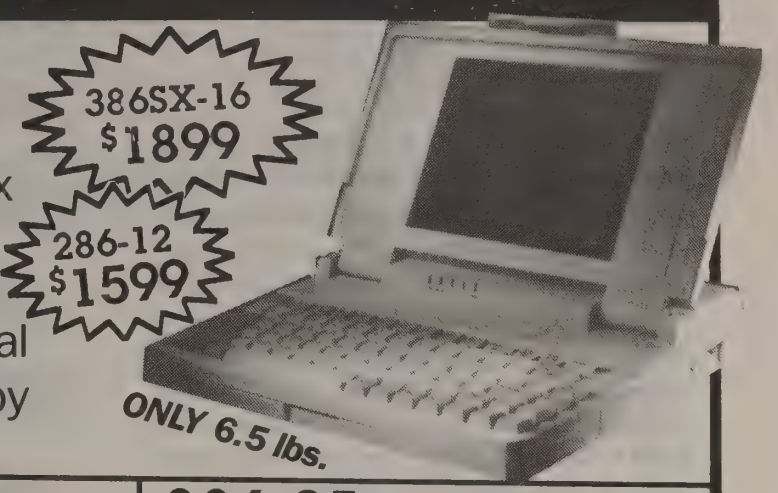

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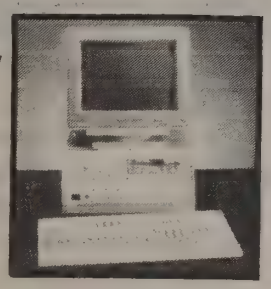

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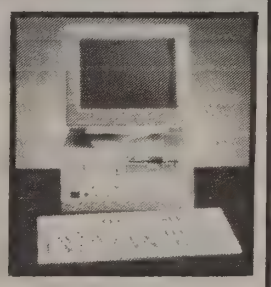

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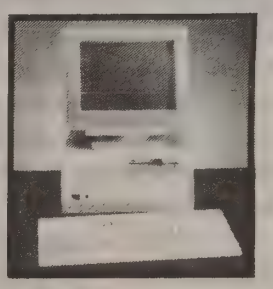

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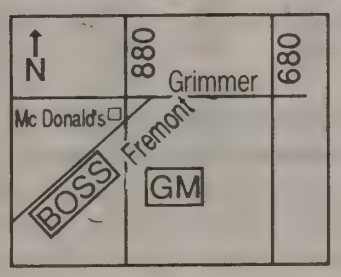

that we got to look at a lot of cuts at the problem. In the timeframe we were architecting this system, there was obviously the Mac, and the plans for the Mac II had been announced, and the NeXT machine was out there, and OS/2 was out, and Windows, and the original Mac software. So we studied a lot of platforms, and when it comes to the multitasking model, we believed that OS/2 had the best multitasking model that's currently implemented. So our multitasking is a very similar multi-threaded multitasking architecture to what OS/2 offers.

Going back to something you said earlier about Microsoft trying to head UNIX off at the high end of the marketplace, it seems like you're moving in an OS/2 supportive direction in the sense of being clients on an OS/2 network at least. But does your use of the OSF Motif interface suggest that you're also looking at operating in OSF-type UNIX environments?

We actually are interested in that, but I think the fact that we happen to be running Motif may be a little misleading. The main reason we're running Motif is that it was a way to get a clean license to a Windows/Presentation Manager look and feel. Again, we don't view it as an either/or—either we're successful or Windows is successful. We fully expect Windows to be successful, and as we move into the corporate world, we expect to be more successful in locations that have standardized on Windows than we are in companies that still haven't gone graphical at all.

You take, for example, a company like GE that standardized on Windows. What they're going to realize is that they can't, worldwide, throw out all of their PCs, and they're going to find that many fewer of their PCs run Windows effectively than currently run DOS. So they'll fall into sort of a have and have-not world—people that they're buying new hardware for, they'll probably buy hardware adequate to run Windows. What we expect to be able to do is to come in and offer a solution that says, "Look, for your hardware that's sub-Windows, here's a solution that gives you the same look and feel and the same training."

As far as supporting UNIX, to the extent that UNIX becomes successful, there's a very interesting thing in our technology. Our applications are not developed in a user-interface-specific fashion. The apps all have generic objects that define the I/O that the application needs, and at runtime these get molded by a specific user interface library into the user interface.

So that's how you get to do a full-featured drawing program in 31K?

The fact that the system's object-oriented from the ground up allows the code to be small. The UI independence, however, is something that we can leverage—we have, for example, an Open Look user

"Take, for example, a company like GE that standardized on Windows. What they're going to realize is that they can't, worldwide, throw out all of their PCs, and they're going to find that many fewer of their PCs run Windows effectively than currently run DOS."

interface library. The same exact application binaries—if they're running on a system that has Open Look installed, they'll get an Open Look look and feel. So in some ways our product's a chameleon.

That also makes it a good high-volume inexpensive platform solution, in that regardless of what you choose as the standard for your company, you can provide inexpensive terminals or inexpensive workstations that run the look and feel that you happen to choose. So if you buy into Sun and say, "I want to go with Sun workstations and Open Look," but you say, "Gee, I want to add a couple of clerks to do data entry and things like that," you could put a couple of PCs onto that network and run an Open Look look and feel on the PCs.

So there's a flexibility to the kind of user interface that we provide that would let us provide inexpensive Intel-based workstations into UNIX and Windows and Presentation Manager environments, and let the users have their choice of the look and feel that's appropriate for that environment.

Installed base is a big factor in the success of this type of software. You've got some bundling arrangements with hardware vendors; that, in turn, should attract some software developers. Is your chameleon-like interface an advantage or a disadvantage from the application developer's standpoint?

It's a terrific advantage to the application developer, because they don't have to worry about the user interface. Right now they use a pseudo-English high-level language to define their user interface. Their user interface is really defined in generic terms—instead of saying, "I want a menu item," they ask for an interaction group, and they can leave a hint that says, "I'd like this to be a menu." Instead of the actual menu button there's a generic concept called a gentrigger. The beauty of the system is that the app developer really is working with the user interface from the point of view of "Here are the interactions that I need." They get to see, for the particular user interface that they're running while they're debugging, exactly how that will come up and look, say, under Motif.

But if we do a user interface library for Open Look, or if we do a new pen-based user interface library, their application binary, with no recompiling, will come up and run under that look and feel. So in some ways when they develop an app today for our environment, they are actually generating an application that will work well on some future pen-based system, would work well, perhaps, on a mixed UNIX environment where the PCs were running Open Look.

The most important thing for us to get across is the fact that we're offering a runtime to this technology to application developers. If you forget about us as a platform for a second, and you were an application developer that viewed GeoWorks simply as a technology vendor that was offering you a toolkit to help you do your DOS applications, it makes sense to develop for this technology. Our deal is that we'll give all of the system software technology—the PostScript-like imaging engine, all the printer driver support, the video drivers, the multitasking kernel—to the developer for 1% of net sales. So if you have a $100 application that's got a $50 wholesale, for 50¢ you get outline font technology, you're insulated from graphics cards and printers and everything else.

I was on a panel with Microsoft at COMDEX, and Jeff Tarter asked us to project the platform market share at the end of 1992. Microsoft's own projections are that only 20% of the PCs out there will be capable of running Windows at the end of '92. So the other 80%, they just stay character-DOS, is Microsoft's view of the world.

Well, our message to people who say, "I've got to continue to develop DOS apps if, out through the end of next year, 80% of the PCs are DOS-based," is: "Here's a technology library that you can take that's efficient enough to run even on your 8088-based PCs, but instead of having a vanilla-looking character-based DOS app, you can have something that looks every bit as good, if not better, than your Windows app. You can have your DOS app, you can have

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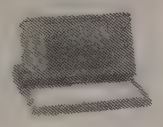

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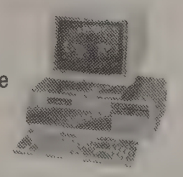

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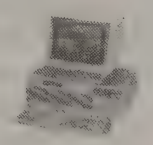

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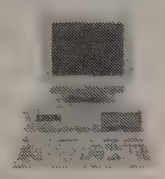

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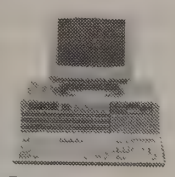

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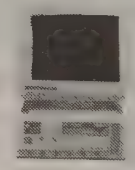

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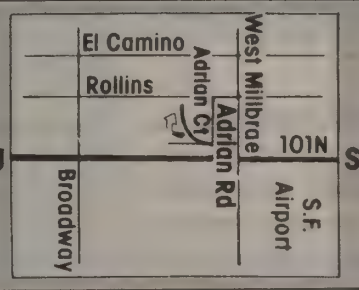

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the same look and feel as your Windows app, your DOS app can run on all those machines that are sub-Windows, you can have the same documentation because the user interface is the same, and you can structure your program to work exactly the same." This whole graphical windows-looking DOS application just looks like a DOS app to that end user.

The other message from us to developers is, "Do you want your character-based DOS app to be competing against a DOS app that's running with this system technology?" So we think it's really a no-brainer for developers. If they really study the situation, it's a pretty obvious decision to say, "I'm going to license this technology just to do my DOS versions, whether these guys are successful or not." We think that that's a justifiable reason all by itself to adopt our technology.

In our first quarter we've signed up more OEMs, and we will bundle into more systems with our system software platform than the Mac did in its first year. Right now we have 500,000 of committed OEM volume, five manufacturers, the largest of which are Samsung and Philips, that are bundling our system software into PCs, going out into volume markets.

You've only been shipping since last fall, right?

November 30 was our first ship date, so the product's been shipping about four months, and we've been able to line up over half a million units of OEM volume.

So the platform's also going to happen, and that's a good reason to get in early, but in some ways we're an anomaly. If you look at any other new graphical environment platform—if you look at GO, if you look at Windows when it was launched, or the NeXT machine—they're all interesting technologies. Their only hook, though, was that they were interesting technologies, because there was no installed base to sell the app that you developed as they were launching.

Whereas we launch, and we offer this runtime, and so we offer to a software developer the largest installed base that's ever existed. In fact, if you develop an app on our platform and take a runtime, there's a larger universe of people you can sell that app to than you can sell Windows apps to. When you develop an app on our runtime, that package can now be sold to every single one of the eighty million PCs that are out there. If you develop an app for Windows, there is no Windows runtime, and most of the hardware isn't capable of running Windows.

It's a very non-obvious observation about what our technology offers to a developer; usually when we sit down and go through this logic with developers, they've been locked into thinking "new technology" means "small installed base." I sit with a developer and go through this rationale with them, and all of a sudden a light dawns and they go, "Wow! I can write an app to this platform and it's not this tiny installed base, it's every PC, because you're giving me a runtime to ship."

You're in a better position than most to remember the big hype about the home computer some years back, closely followed by the announcement that The Home Computer Is Dead. What's different about the low end now?

Well, we think that market can happen, but we don't necessarily view our opportunity as being all the way down at the level of making the home computer happen. We really are creating a systems software solution for affordable computers, and there's a need for affordable computers in small business and corporations, as well as school and home. So we view the target for our technology as broader than just the home market.

While affordable computers are important and valuable in corporations, they're the *sine qua non* of the home market. With Microsoft basically being focused very much at the high end, and being the only system software provider for PCs, what happened was that there was never anything exciting to drive the home market on PCs. With the system software focused only at the very high end of the pyramid, what happens is that as the systems come down in price and get to where they would be affordable to launch a home market, the technology is no longer exciting.

Nobody wants to buy an 8088 and WordStar for their home, because they see more exciting technologies in the office, but the hardware required for those technologies they can't afford. So there's a perpetual state of waiting.

We think that by focusing and providing exciting technology on affordable computers, you can open up that market. I think Apple very much believes that, with the whole Mac Classic launch, and I believe they'll be successful with that. I think in some ways our technology allows many of our PC manufacturer OEMs to be competitive with the Mac Classic, to allow them to provide an exciting graphical technology on the same affordable hardware. I think you will see a terrific expansion of the home market in this decade.

Why does GeoWorks run so much faster than Windows? How did you get it to work so well on 8088 machines?

I think we touched on this a little bit earlier. If you look at Windows as an architecture, it was really designed back around 1982, and the only thing that was out there for them to look at at that time was the Mac, and the state of the art then, the whole concept of using an object-oriented UI or building the system object-oriented, really did not exist. So there were a lot of things about the Windows architecture that are an old design that lead to inefficiencies.

For example, the whole toolkit approach to user interface design has the application doing a lot of work to make calls to put up user interface elements in menus and dialog boxes and things like that; whereas there's actually a project at Stanford called the Interviews Project, that I think NeXT probably got the idea for the initial NeXT object-oriented UI from, which introduced this concept of using object-oriented technology to implement the user interface. Ostensibly it was originally done because it makes it much easier to create the user interface, but it also has the side benefit that, instead of the applications doing all the work to support the user interface, the applications tap into a library of reusable user interface objects.

So you look at something like our word processor—our word processor's a 58K application. Put that in contrast with even simple Windows word processors, which are several hundred K to a meg for their executable. It's not that the guys who wrote our word processor that much smaller are that much smarter; it's more that it's a much more modern system architecture. Instead of each application repeating a lot of functionality, they're reusing objects that are built into the system.

There's another level of optimization we've done, where we've created this whole assembly language environment, a middle-level language called object assembly. It's an assembler that supports all the high-level, object-oriented programming language constructs of inheritance and object messaging, etc. But all the methods, the routines, the process messages sent to objects, are written in assembly code.

GeoWorks can be used just as a user-friendly menuing system, disregarding the applications. What percentage of your customers use GeoWorks primarily in the appliance mode, or for the DOS menu?

The appliance mode is designed for the novice user. That's designed to let someone who's brand new to computing get into computing. It's a stepping stone—we think that after a while people will move on from the appliance mode. So that's sort of a separate answer from the DOS menuing capabilities.

What we're finding from our early customers is that they would prefer to stay in our environment as much as possible. Once they get into it and start working with the apps, the loudest message we're hearing from our customers is "Get more apps out in the environment!"

But in the meantime they're using the program to launch and manage their existing favorite DOS apps, and to that extent we are adding, in the 2.0 release, DOS task-switching, so we will both support the MS-DOS 5.0 DOS task switcher and the Digital Research 6.0 DOS task switcher, as well as have our own DOS task switcher. So our system software will look, at startup, and say, "Oh, if you're running one of these things that includes a task switcher, use that." That way we would just hook into that task-switching environment, and if you're running an older version of DOS, we'll add DOS task-switching to your system.

When is 2.0 due?

Around the end of the year.

You said there's an interim release before 2.0?

There's a release coming out in about four to six weeks that's going to have the Houghton-Mifflin spell-checking technology built into the package, and a number of system enhancements. We've done a lot of localization for the international market, and some of those features are beneficial to our US customers, like being able to change date and time formats, and things like that. Those will all be included in a free upgrade to any registered users.

Do you have language-specific versions of GeoWorks for different countries?

Funny you should ask! This (reaching for box on table) is the German package. Our German republisher has done a nicer job than we did on the manual, to tell you the truth. They're including a hardbound manual in the package—I was really impressed with the job they did. Fully localized to

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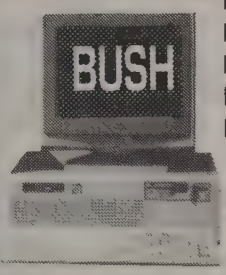

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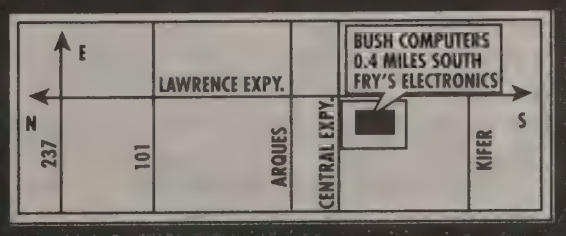

the German market. The republishers in Germany and France are both shipping currently, and the French version will be available in Canada.

Is there a Japanese version yet?

The Japanese version is in the design phase. The double-byte character set version of the system software has been spec'd, but we don't expect that to be on the market until sometime in early-to-mid-'92.

Will it be runnable on an XT?

I don't see any reason why it wouldn't run on an XT. From our system's point of view, the main addition is, of course, a front-end processor; and then you also have the need to have your text object and fonts support Kanji, and the whole double-byte character set, since there's thousands of characters. There would be some performance degradation due to that, because every time you have an equivalent-length passage, it's actually twice as large. But if you look at the text content of an application, or the data file, data files for straightforward things are relatively small, even if they double; so I'm expecting that it will work fairly well even on XT-based platforms.

But I shouldn't go out on a limb on that until we've actually implemented it.

What about GeoWorks in the educational market?

We think the educational market is a perfect fit for the technology. It's really part of our growing pains. We're a sixty-five-person company now, and our initial focus has been on the retail channel. We've had a lot of interest from the educational market, and we've just recently put together educational programs—lab pack offerings and things like that. Our plans for that have been accelerated by the market—the Oakland school district, for example, wanted to do a volume purchase agreement because they felt the product was perfect for their PCs.

We've also had a lot of interest from other people targeting the educational market—IBM in Europe, for example, is sending over developers to get trained on developing for our system, because they think it would be a great technology for an educational network product in the European market. We're just starting some discussions with IBM's educational group in the US, and we're hoping that those will be very fruitful.

In the educational market, they're seeing the Mac Classic as a real threat to the success IBM's had with the Model 25s and Model 30s.

There's a rumor that IBM was interested in GeoWorks for the PS/1, before they put in the shell that they've got.

There's no truth to the statement that they wanted to put us in. There's a runtime of our technology in the PS/1; it gets back to this chameleon nature of our user interface technology. Most people aren't even aware of this—we did a Presentation Manager 1.0 look and feel for Quantum, which was providing a service called Promenade, a private-label version of America Online that comes in the PS/1. Most people look at that and think it's an old Windows runtime, because the Presentation Manager 1.0 look and feel is the old, prior-to-the-3D look of Windows, the Windows 2.0 look.

That runtime was shipped with the PS/1 as the basis for the Promenade service. We've had some discussions with IBM about adopting our technology for the PS/1, and I understand their position—they currently bundle Microsoft Works, and they've had a long-standing relationship. But I think that IBM wants to provide the best product for its customers, and right now they feel that a spreadsheet has to be part of the package. So we're racing to get a spreadsheet done, and when we do you can bet we'll go and knock on the PS/1 manager's door and say, "We think we have a better solution for you."

Have you considered putting GeoWorks on a ROM that's included with the hardware?

I can't talk too much about that, but that's clearly the next phase for us. If you look at the compactness of our software—you can put our entire application suite and outline fonts in 4MB of ROM. Of the three megs that our application suite takes up, a meg and a half is the outline font data, and we have nine outline fonts. So if you wanted to go to, say, the original Apple LaserWriter font set, Times Roman, Helvetica, Symbol, and Courier, you could probably get down to about two meg of ROM for the entire application suite. For a lot of environments, like portables, that would make a very attractive solution. So that's clearly a future direction we're headed in,

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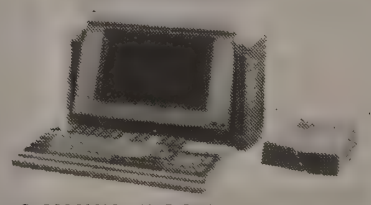

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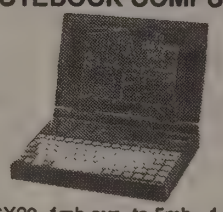

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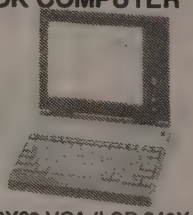

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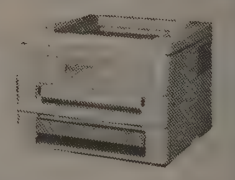

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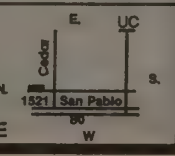

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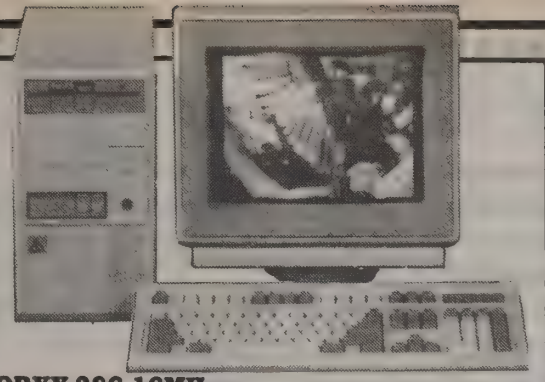

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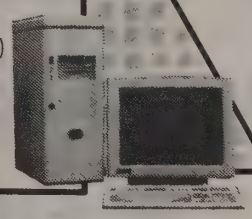

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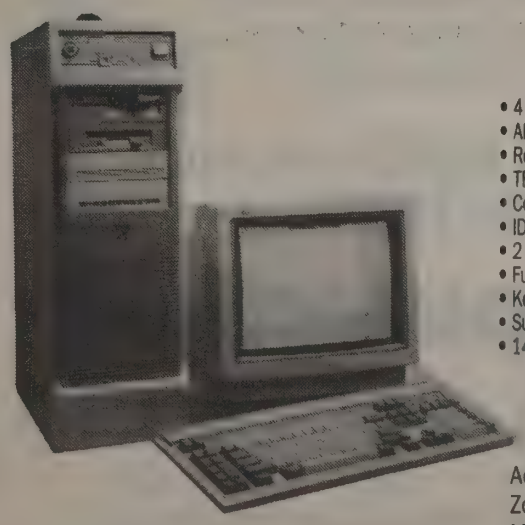

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LANDMARK = 150

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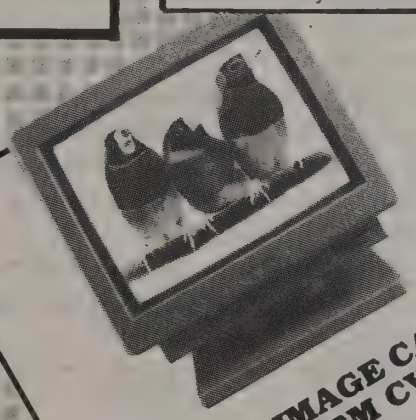

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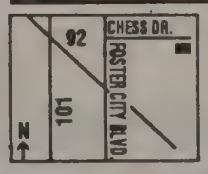

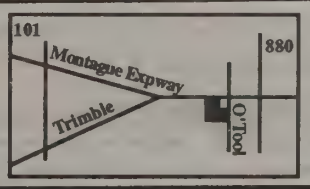

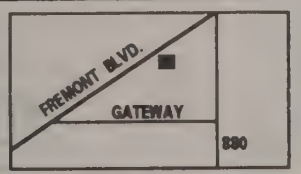

and let me just leave it at that. (laughs)

Speaking of fonts, are you planning any future application support for either PostScript or TrueType, or will you stick with your own proprietary technology?

Actually, the technology that we include isn't proprietary, it's licensed from Digital Typeface. The fonts are URW fonts, from a German type foundry. So there's access to over 1,600 fonts in the URW library. For mass markets, very cost-effective markets, this is probably adequate.

We did, however, design the system to have installable font rasterizers, and we are negotiating a deal that will allow us to support all of the major type formats. Again, there's a wide range of markets that we see the technology being suitable for. If you're on a low-cost network at your company that's hooked into a PostScript printer, you would like to be able to use PostScript fonts. So for that reason we will probably be providing support for both PostScript fonts and TrueType fonts in the future. Right now it's sort of on the edge whether that capability will be in the 2.0 release or not.

The telecomm package is pretty basic right now, and the word processor lacks a find/replace function and mailmerge. Can you give us a timetable for changing some of that?

The free upgrade will have the spell-checking capabilities and, I believe, the search-and-replace. The more advanced word processing features will be in the 2.0 release.

With GeoComm, we were intentionally making a vanilla comm program. The very sophisticated program is America Online; GeoComm is intended to be adequate for getting onto a mainframe, or getting your MCI Mail, or being a simple terminal emulator. We would like to find an ISV that's really focused on the telecommunication/terminal emulator market, to do a very nice product. It would be our preference not to continue to evolve that product, but to have a third-party company deliver that. We've talked to some third-party telecommunications vendors who are interested in pursuing it, though we haven't worked out any deals yet.

Do you have any commitments yet from third parties to do specific applications?

We do have a number; there are only a few I can talk about. The Dimensions Research people who did VP-Planner are doing a high-end spreadsheet...

Which is going to have a COMPLETELY different look and feel...

Yes, there's one thing I think they've learned. (laughs) And of course it'll be graphical.

One of the things about our product is that you're isolated from any look-and-feel issues, because you write to this generic user interface, and it will get mapped into one of our licensed user interfaces. I think it's something of a relief to the people at Dimensions Research that they don't even have to think about that issue.

Also, the people from Fifth Generation Systems, who do FastBack and the Mace Utilities Group, have announced that they're doing product; in fact those guys are way ahead of schedule. I've seen working applications from both companies.

The other people that are developing for the environment are choosing to remain anonymous at this point. Part of the attractiveness to them is that once they see the light, they, of course, would prefer that their competitors didn't. That way they're the first one out and grab major market share on the platform. So they don't want to encourage any of their competition to also adopt the platform. And we understand that.

When will these applications start coming to market?

I think you'll see the first ones around the end of this year, and more in '92. It's part of its being a more modern architecture, being more object-oriented—a lot of the things that they typically had to do for themselves are already there. Take Page Preview. Page Preview is rewritten over and over again in every Windows application. In this environment, because it's a PostScript-like imaging model, not only do you get Page Preview, you get full scaled editing. If you wanted, you could have in your application a little spin gadget that let the user dial up the percentage scale that they wanted to view the document, with no work in the application. So what these guys are finding is that they can develop apps much more quickly under this technology. It's part of the benefit we've had of really seeing the evolution of system software and being able to build those capabilities into the environment.

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Do you have any theories why Microsoft didn't do this?

The main thing, as I said, has to do with the fact that they put a stake in the ground with Windows. It gets very hard to change your platform; in fact, one of the real benefits that we have is the current success of Windows. Because everybody that's writing to the current Windows model, there's no way to really write a tight application to that model. That model requires you to write a lot of code to support your user interface and your application, and so by necessity your applications are large.

And Apple has had the same problem with getting System 7 out. You have the problem that having an existing customer base and an architecture which was state-of-the-art back in 1982 is both a benefit and an albatross to you. I think in some ways Microsoft has been hampered by the fact that they launched a platform in the early days of graphical interface technology.

In terms of them saying, "Let's start over again and do something clean"—they sort of did that with OS/2. Architecturally OS/2 is really a better system than Windows. And they could do more to optimize OS/2, I believe, than they could to optimize Windows. But even OS/2, unfortunately, as an architecture, was prior to the recognition of object-oriented technology and the benefits it would bring. So I think the reason they didn't do it is that when you make a bet, like the bet they've made with Windows or OS/2, there's an enormous amount of internal momentum behind that architecture. It's very hard to say, "Let's trash that effort and start over again."

And then you add to it the complexities of whatever the political issues are—and if anybody knows the answer of what's really going on between IBM and Microsoft, I'd love to hear it (laughs). Some of the speculation in the industry is that since Microsoft entirely owned Windows, they chose to really back that horse. In some ways, as a technical person, I feel that that was something of a mistake, because I think that architecturally OS/2 was a better design than Windows. I think Microsoft would agree with that also.

Some people are saying that eventually there won't be any difference between OS/2 and Windows. by the time they get out Windows for the 32-bit machines, it will essentially be OS/2.

And actually, Microsoft has been very open with us. They sent us their Win32 specs and said, "Look these over. If there's any technology you have that you might be interested in licensing to us..." And as we looked through the Win32 specs, they're moving the Windows architecture to be much more like our architecture. So they realize what the current state of the art is.

They still wouldn't be able to deliver real high performance on cost-effective machines, because the Win32 has to support all the old Windows applications. Again, that's part of the problem of your installed base being a benefit and an albatross. All of the apps that are being written to the Windows 3.0 system will have to continue to be supported, so the future version of Windows will be like having two engines in a car, one diesel, one jet fuel. That makes the car heavier, and it requires more horsepower to make it move, and things like that.

I think Windows will always be a high-end solution. It's always going to require a lot of horsepower. Their current success is going to ensure that, because as they make it a more modern architecture with the Win32 release, they're still going to have to support all the customers that are running old Windows applications. Whereas we have the benefit of coming out with a much cleaner solution and not having any of that old architectural baggage to support. ■

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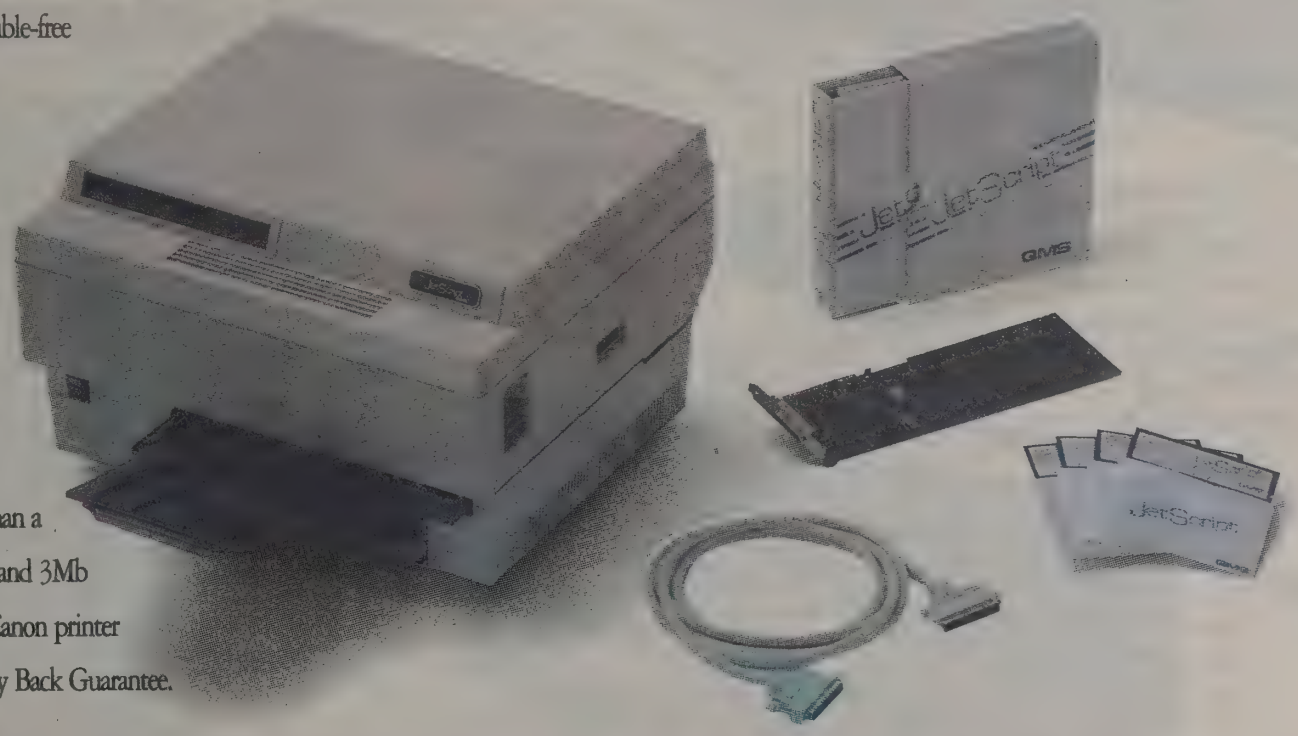

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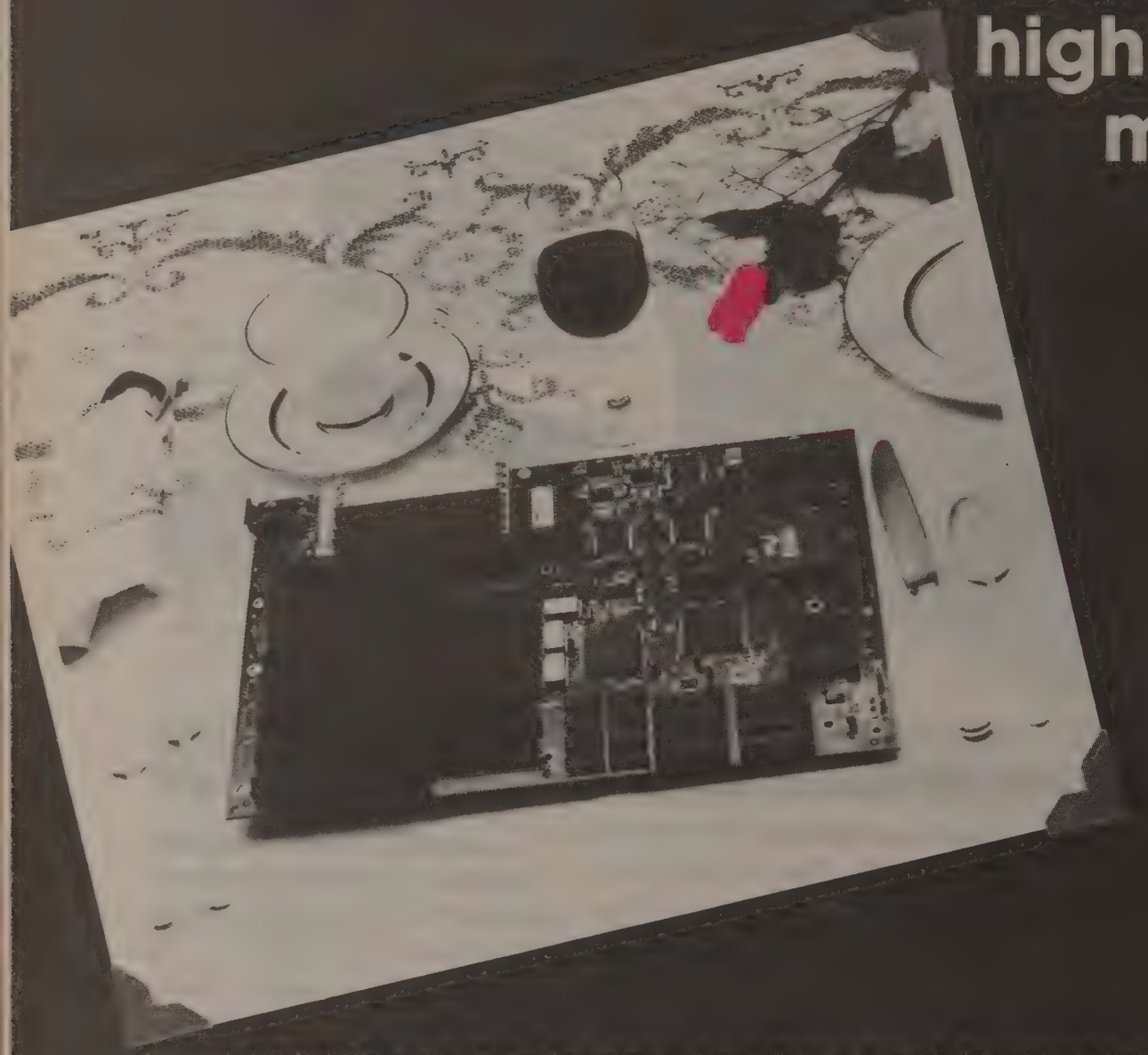

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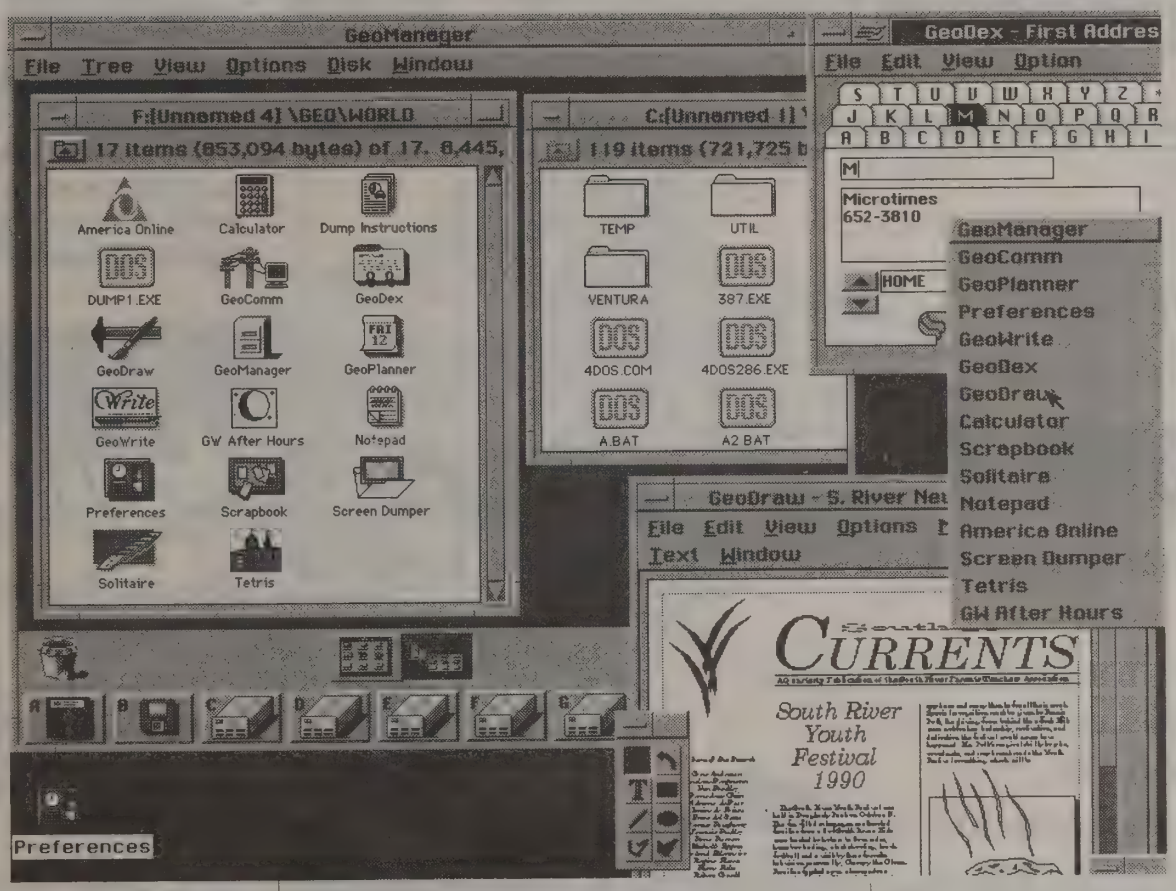
About GeoWorks Ensemble



Even if your PC can't run Windows, GeoWorks offers you multi-tasking and a user-friendly environment.

GeoWorks Ensemble is a graphic user interface bundled with a suite of applications. Designed to run on most MS-DOS compatible machines, Ensemble requires 512K of memory, 3MB of hard disk space, and some kind of graphic display adapter.

The GEOS operating environment is designed to make life easy for computer beginners, much like the original Macintosh. Ensemble removes novice terror of MS-DOS in three ways:

- For absolute beginners, Ensemble provides an "appliance mode." Like the entertainment guide in a BART station, appliance mode presents six choices for simple tasks. It requires no computer experience to use these appliances. You may enter appointments on a calendar, enter names on a Rolodex, type a note, or play solitaire.
- The second Ensemble mode is a DOS program menu. This is an easy-to-configure front end for users who hate the C:> prompt. Click on the typewriter icon and WordPerfect starts, or click on the ledger-book to start Lotus.
- The third mode is PC/GEOS, proper, the Windows-like GUI which includes the applications and DOS file manager.

GEOS provides a full-featured graphic environment which performs briskly on 8088 machines. The bundled applications permit basic word processing, desktop publishing, and telecommunication. The package also includes an electronic address book, schedule planner, and calculator.

The GeoWorks applications have mid-range power and functionality. GeoWrite and GeoDraw are reminiscent of Digital Research's GEM Presentation Team. GeoWorks is a more powerful GUI than GEM ever was, so the interface lends additional scope to the applications:

PC/GEOS uses a PostScript-like display which allows superior text resolution. Documents or drawings can be edited simultaneously in multiple views. This makes for easy transfer of text or graphics between windows. The print output from the GeoWorks applications corresponds to the screen display. Performance with dot matrix printers is remarkable.

GeoManager, the homebase for Ensemble, is like a combination of Microsoft Windows' Program Manager and File Manager. GeoManager uses a windowing system based on the OSF Motif X-Windows interface. GeoManager windows display the true DOS file and directory structure. (Happy surprise—ordinary DOS filenames may use up to thirty-two characters!) You can copy files by clicking and dragging icons between directory windows, or you can purge files into the wastebasket. GeoWorks data files are associated with their creator applications. (You can click on either a program or a document to start working.)

GeoManager lacks the Macintosh's desktop workspace. Individual file icons remain fixed in specific folder/directories. This is similar to Windows' File Manager, but the icons are more decorative. Two built-in icons open specific GeoWorks directories. (It would be nice if you could open user-chosen DOS directories in this way.) Pull-down menus can be "tacked" to a window so that they remain open. This is another useful feature, comparable to the Mac's tear-off tool palettes.

GeoManager launches a DOS application when you click on its icon. The graphic interface shuts down and the DOS program is loaded. When you exit from the program, GeoManager pops up again. Another smart feature preserves the state of your Ensemble windows and documents. You return to Ensemble to find it exactly as you left it.

All of the Ensemble applications can be multitasked. You can download a file in GeoComm while you type in GeoWrite or copy files in GeoManager. CEO Brian Dougherty says that Ensemble v.2 will permit DOS task switching. [See the interview which accompanies this review.]

The Applications

At present, Ensemble includes four productivity applications, plus Rolodex, scheduler, calculator, scrapbook, and two recreational programs. The following is a brief summary of Ensemble's main productivity capabilities:

GeoComm: Communications program. Uploads and downloads text files or uses XMODEM for binary files. A simple script language allows automatic dial-in and log-on to bulletin boards or commercial services. GeoComm has seven terminal emulations, including VT-52, VT-100, ANSI and IBM 3101. GeoComm allows you to capture a session in a disk file. More sophisticated telecommunications functions are not supported.

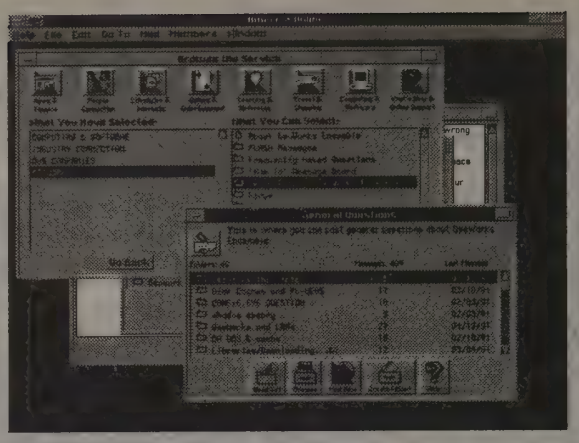
GeoWrite: Text/Graphics Word Processor. Creates documents which use text and graphic combinations in multiple fonts. (Eight URW typefaces are included in the Ensemble package.) GeoWrite supports multi-column text, simple paragraph styles, auto page numbering, and headers/footers. The WYSIWIG display allows editing of multiple documents or multiple views of the same document. GeoWrite can track and kern characters, and insert leading between lines or paragraphs. You can draw vertical rules for tables and columns with the TAB lines feature. GeoWrite documents

By Lenny Bailes

may be exported as ASCII text files for use with other word processors. ASCII text can also be imported into GeoWrite.

Version 1 of GeoWrite lacks spell-checking, a find/replace function, footnote support, and mailmerge. These features will probably appear in an upgrade to be released before the end of the year.

GeoDraw: Vector Drawing Program. Creates shapes: rectangles, ovals, polygons, and lines. Shapes and text may be combined in multiple fonts and colors. There are sixteen pattern fills for shapes. Text may be displayed or printed in different colors or grey halftones. Text and graphics may be rotated through forty-five-degree increments, mirrored or flipped. Objects may be combined or broken down, and moved to foreground or background layers. Bitmap graphics in .PCX or .TIFF format may be imported on a background level, but may not be edited.



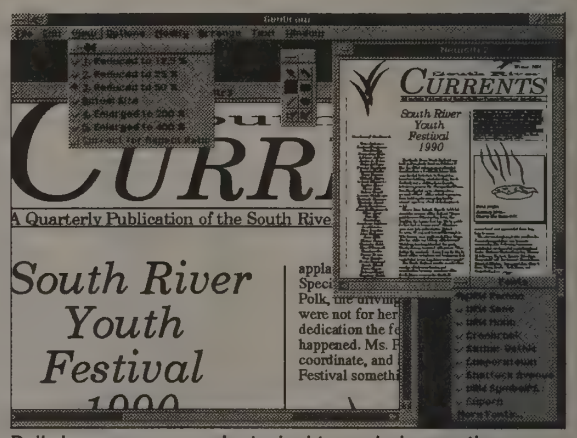
GeoWorks Ensemble includes software for America Online, a popular, easy-to-use information service.

GeoDraw does not produce bezier curves, or allow editing of bitmap images. Text cannot be converted to curves for special effects. GeoDraw files cannot be exported to other PC programs. (An add-in utility from America Online will capture GeoDraw windows and save them to disk as TIFF or Encapsulated PostScript files.)

America Online: The GeoWorks package includes dedicated software for this information service, with several free hours of online time. In addition to the business, leisure, and computer forums known to Macintosh users, America Online includes an active GeoWorks area. Ensemble users may find program enhancements, user tips, clip art, and discussion forums. The GeoWorks area is vigorously monitored by GeoWorks programmers and support personnel, who appear to enjoy their work.

Can GeoWorks Ensemble Replace Windows?

This loaded question probably lurks in the mind of every potential GeoWorks customer. The answer is both yes and no. PC/GEOS is potentially superior to Windows as an operating environment, but at present, there are only a few GeoWorks applications available. If you require the heavy-duty capabilities of an Excel, a CorelDRAW, or a PageMaker, you are not going to find that power in the programs bundled with GeoWorks Ensemble.



Pull-down menus can be tacked to a window so they remain open. The same document is displayed here in 50% and 200% views.

However, if you're looking for a user-friendly interface and some basic productivity, Ensemble can provide it. The documentation is good, and special care has been taken to avoid frustration for non-technical users.

Unlike Windows, Ensemble performs well on all PC platforms. If you own a 286 or 386 with extra memory on the motherboard, Ensemble can use that memory as a swapping area. Ensemble on a 10MHz 8088 machine with 640K outperforms Windows on an 80286 with 2MB. If you compare only the graphic operating environments of the two packages, Ensemble outperforms Windows as a multitasker and as a file manager.

Ensemble cannot multitask DOS applications, even on a 386 machine. At present, GeoWorks does not include support for PostScript printers or industry standard file formats. Windows has the weight and momentum of industry giant Microsoft behind it. When Windows applications get rolling on a 33MHz platform with 8MB of memory, this is truly impressive.

Yet GeoWorks is fun, the way the early Macintosh was fun. I can think of no better candidate to replace all of the Apple IIes in public school systems and give students a good introduction to contemporary personal computing.

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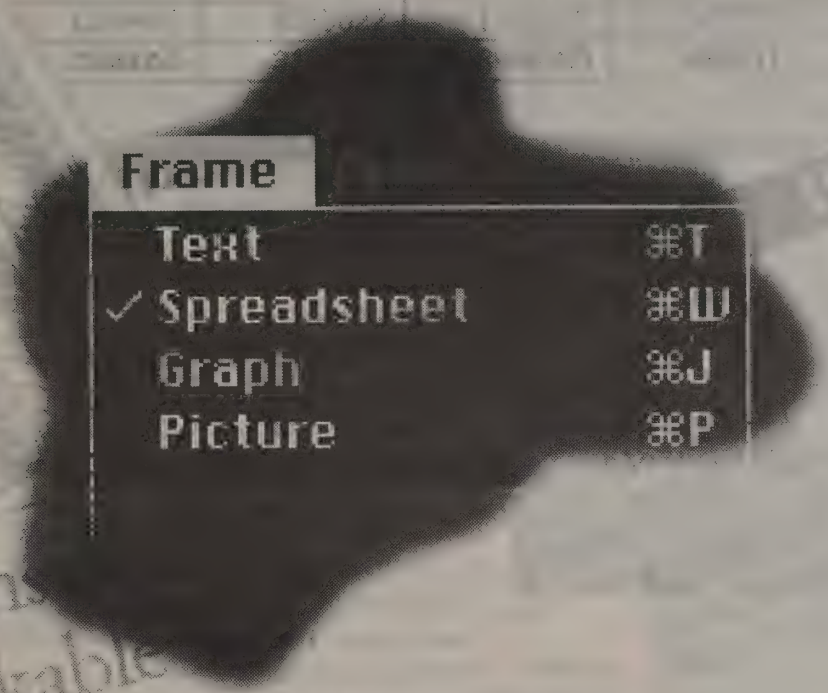

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Does "Easy-To-Use" Mean "Graphical"?

Microsoft Product Line Suggests Consistency May Be More Important Than Icons

BY PAUL HOFFMAN

Every time a new trend in computers becomes established, dozens of experts will tell you how they knew all along that this was going to be big. They'll also tell you why. Usually, their arguments boil down to one idea: the trend makes life "easier" for the average user.

Brilliant, huh? Now we don't have to worry about all those trends that make life more difficult and costly for ourselves like people in other fields. Thank you, technologists everywhere, for only giving us things that make our lives "easier."

Of course, these experts conveniently ignore all of the ideas that were passed over, many of which did in fact make users' lives more difficult. The experts might be a bit slow to admit it, but it is the market, not the manufacturers, that decides what is really "easier."

If you've been watching the computer scene over the last seven years, you probably remember the big arguments that ensued just after January 24, 1984: why the hell would anyone be interested in buying a Macintosh? The often-defensive answer was that the software for the Macintosh all used the same graphical user interface (or GUI for short) and thus was easier to learn and use. Most IBM PC users, as well as those who were using the vast majority of minicomputer and mainframe software, got a good laugh from that. Clearly, character-based user interfaces weren't all that hard to use, since the vast majority of people were very successfully using them. End of argument.

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BEHIND THE GRAPHICAL USER INTERFACE: HIDDEN ASSUMPTIONS

Well, not really.

Microsoft surprised many people by coming to the support of GUIs for personal computer users—by writing the best-selling Macintosh applications software and by promoting GUIs on the PC in its Windows and OS/2 operating systems. By 1987, Microsoft was selling the same line as Apple: people using GUIs were more efficient and learned their programs faster. Mind you, this was coming from a company who made most of its money from some of the most un-graphical operating systems and applications ever seen. Hell, they even got fuddy-duddy old IBM on the GUI bandwagon promoting Presentation Manager for OS/2.

Along the way, people often forgot to check for hidden assumptions. For the sake of argument, assume that Apple (along with, eventually, Microsoft and IBM) was right: it was easier to learn and to use a Macintosh than it was an IBM PC in 1984. You can tell how much Microsoft bought into this line of reasoning by looking at how closely they copied the Macintosh interface with Windows 3.0, the most heavily-hyped product in Microsoft's history. (If you're about to scream about how they all stole the interface from the Xerox Star, don't bother: if you'd actually used a Star you would know that Microsoft copied from Apple virtually everything that Apple changed from the Star interface).

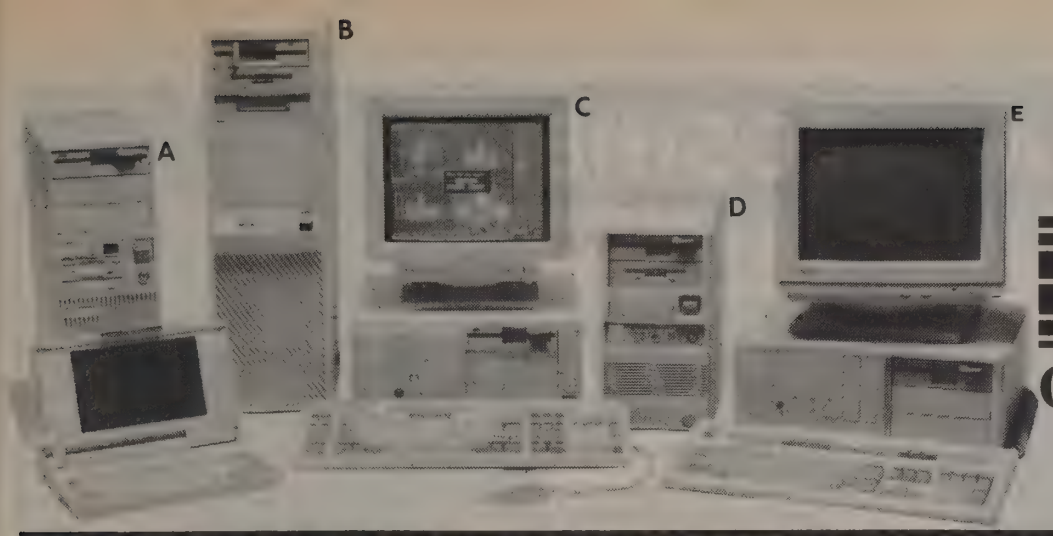
One of the assumptions that people forgot to check was: why did it have to be graphical? The Macintosh interface (and its follow-ups, the Windows and Presentation Manager interfaces) is not monolithic. To the user, there are many parts. One part of the interface is the menuing system: you always know how to give a program commands. Another part of the interface is the windowing system: you always know where to look for information, how to move around in the information (scrolling with scroll bars), how to hide the information, how to see different documents at once, and so on. Yet another part of the interface is the consistent use of the mouse and keyboard. And yet a different part is the use of icons to identify programs and documents.

It was the icons that most offended PC users in 1984. "They're too cutesy." "Who needs them?" "They waste screen space." And so on. And yet it was the icons that most reminded people of the difference between the Macintosh and the PC. "You don't have to type WP C:\LETTERS\BUSINESS\JANE12 anymore: just find its icon and double-click on it." The counter-arguments were in a different language than the arguments, and it took years for each side to see what the other was really saying.

Macintosh enthusiasts ignored one huge fact: once you were running a program, there

Continued on page 91

The experts might be a bit slow to admit it, but it is the market, not the manufacturers, that decides what is really "easier."



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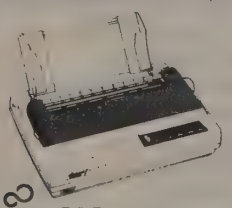

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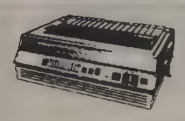

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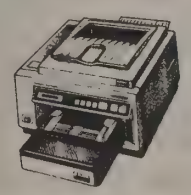

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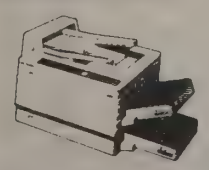

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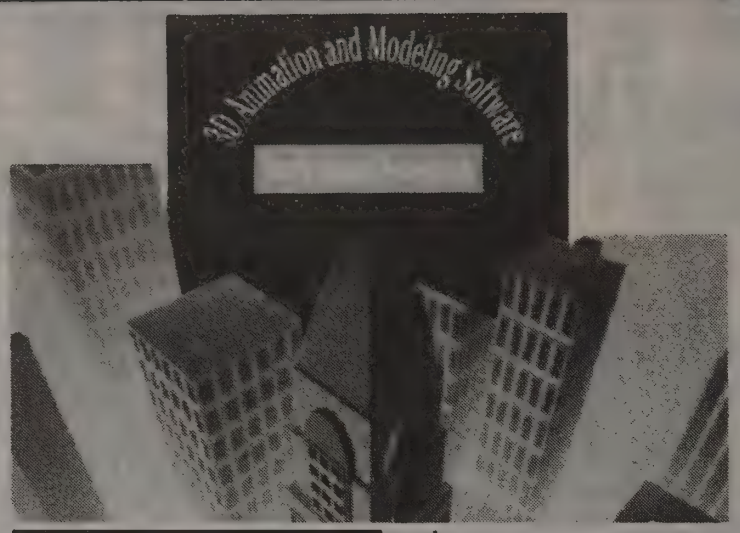

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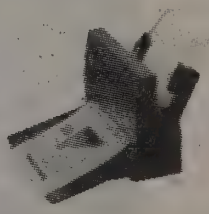

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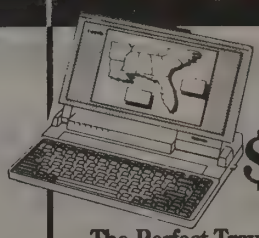

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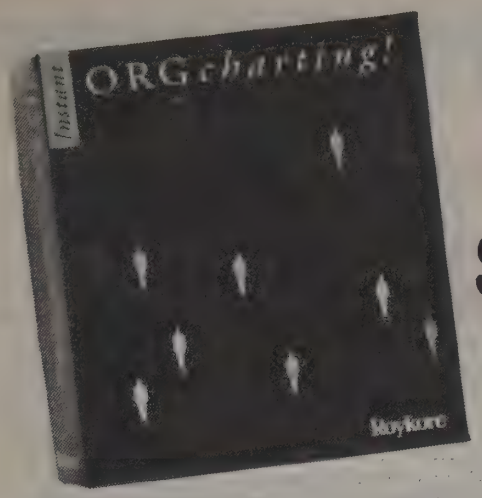

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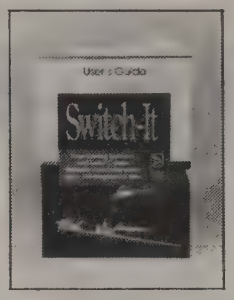

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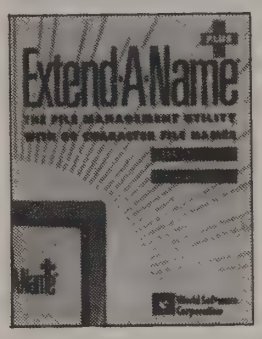

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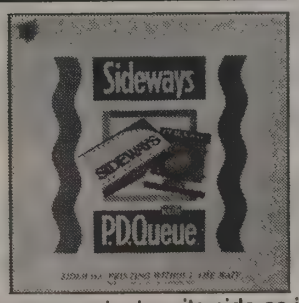

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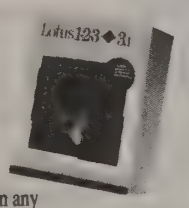

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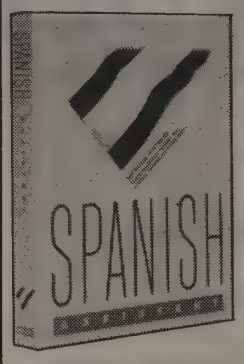

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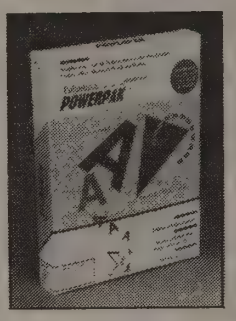

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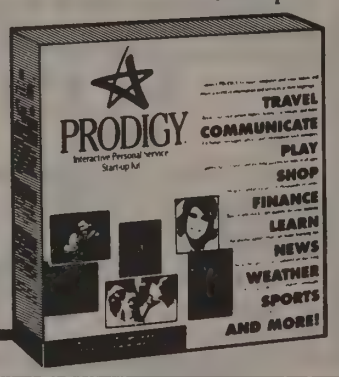

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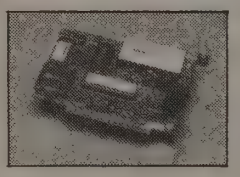

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Continued from page 86

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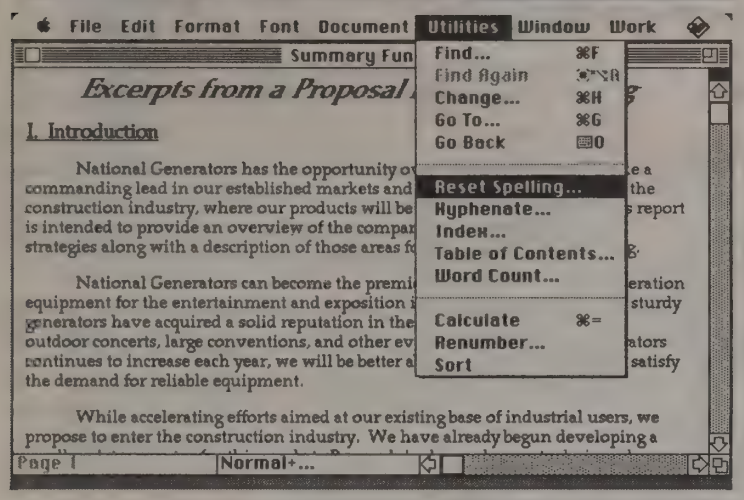
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While accelerating efforts aimed at our existing base of industrial users, we
propose to enter the construction industry. We have already begun developing a
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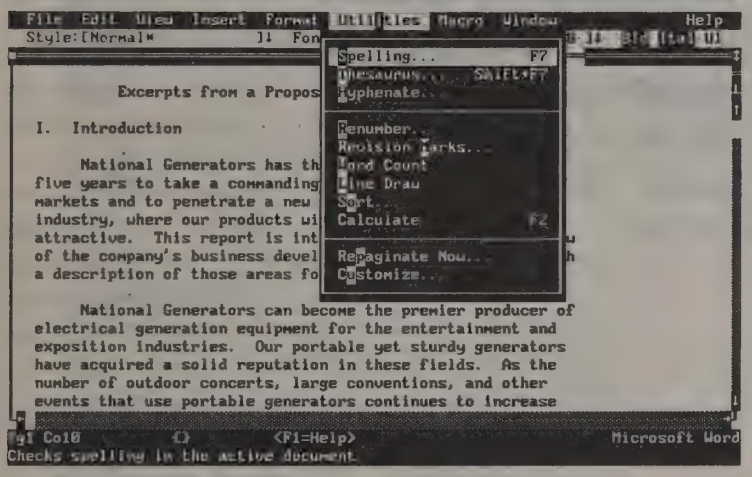
MICROSOFT WORD FOR PC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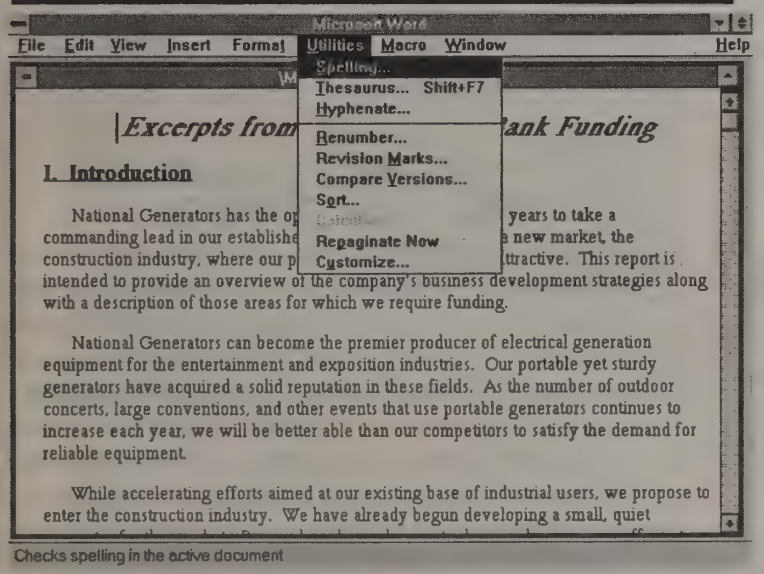
MICROSOFT WORD FOR WINDOWS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National Generators can become the premier producer of electrical generation
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increase each year, we will be better able than our competitors to satisfy the demand for
reliable equipment.
While accelerating efforts aimed at our existing base of industrial users, we propose to
enter the construction industry. We have already begun developing a small, quiet
Checks spelling in the active document

Microsoft's word processors reflect the principle that consistency is more crucial to ease of use than the graphical interface itself.

weren't any more icons. Sure, there was a bit of graphics in MacWrite: the ruler bar had a picture of a ruler and some pictures for tab stops, but these weren't icons that represented actions. Even in MacPaint, the "tool bar" on the left wasn't needed in order to make the program easy to use. Let's face it: no one would have been bewildered by a menu called "Tools" that had commands like "Pencil," "Eraser," and "Rectangle."

The icons, then, were part of the interface but primarily only used to help start programs and find documents. The highly-vaunted "ease of use" and "ease of learning" was pretty much unaffected by the icons. The graphics were nice, of course: boldface characters were obviously bold, different fonts were clearly different, larger type fonts were obviously larger, and you could see the art that you often over-used in your word processing document. But these are artifacts of the screen being graphic, not the user interface.

(A personal aside. If you've been reading my columns for the past few years, you know that I have a great deal of respect for Apple and the Macintosh. I do all of my writing on a Macintosh and don't see any good reason to change. I also have a great deal of respect for Microsoft and its products, including Windows. I've written a dozen books about Microsoft products and am working on yet another one right now. I'm often critical of Windows because it fails in many important areas that a company as huge as Microsoft could have easily predicted and prevented. I don't find the Macintosh and PC an either/or situation, although I do find it funny when PC users criticize Apple for the faults in the Macintosh but can easily overlook the faults in Windows. And vice versa.)

MICROSOFT KNEW ALL ALONG: CONSISTENCY IS CRITICAL

Although Apple has generally espoused the point of view that the graphical user interface was the critical advantage of the Macintosh, Microsoft didn't believe it. The ease of learning and use come from the commonality of the interface, not the graphical aspects. While still supporting the Macintosh in a big way, and while pumping its major Windows applications like Excel and later Word for Windows, Microsoft proved that you didn't need graphics to make users' lives easier: you just needed predictability.

A few years ago, Microsoft introduced a character-based user interface for many of its PC products such as QuickBasic and Works. Late last year, it moved this interface to its front-line word processor, MS Word. The character-based user interface (don't try to pronounce CBUI) has drop-down menus, commands in these menus, dialog boxes with consistent choice methods, and so on, just like on the Macintosh, Windows, and Presentation Manager. As you can see from the three pictures accompanying this article, the screen looks very similar for the three Word products (Word/PC, Word/Mac, and Word/Windows). Of course, there is a huge difference in the text appearance, namely that in Word/PC you can't see the fonts and character styles; but the basic ease-of-learning and ease-of-use aspects of Word/PC are the same for all three programs.

It's important to note why Microsoft adopted this interface for its products that ran on character-based PCs. It wasn't to make users think they were running on a Macintosh or under Windows, since that ruse would only last about five milliseconds. It was so the products would get better user response and better ratings by being "easier." Microsoft didn't want to force the user to buy a graphics monitor and to take the speed penalty for that ease of use; they already had products that required this under Windows. They simply wanted to make the programs work fast and easily. And they didn't need icons to do it.

THE DREADED MOUSE QUESTION

Those who remember the big Macintosh vs. PC debate of 1984 will also remember the second major objection that PC users had: the mouse. "You have to take your hands off the keyboard" (as if we were born with our

Microsoft surprised many people by coming to the support of GUIs for personal computer users—by writing the best-selling Macintosh applications software and by promoting GUIs on the PC in its Windows and OS/2 operating systems.

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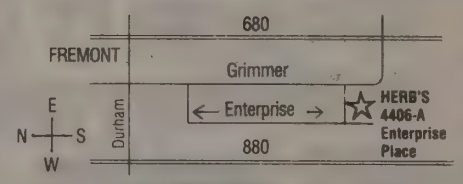

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hands on a keyboard). "What's wrong with cursor control keys and the CTRL and ALT keys?" And so on.

Yet who was one of the biggest suppliers of PC mice at the time? You got it: Microsoft. Word/PC was one of the first character-based PC programs to incorporate the mouse as an integrated part of the user interface. It wasn't a requirement (you could do everything that you wanted without the mouse), but Word/PC helped establish the mouse market on the PC, even though it was a character-based program.

To this day, the idea of using a mouse with character-based user interfaces eludes many people. They still think that a mouse means GUI. Yet Word/PC and the other Microsoft character-based programs use mice as an option. In fact, there are more than four times as many mice on PCs as there are copies of Windows. Many are used on graphics-based software, but many are used to augment character-based software. A mouse is no more "graphic" than the ever-blinking cursor.

There are more than four times as many mice on PCs as there are copies of Windows. Many are used on graphics-based software, but many are used to augment character-based software. A mouse is no more "graphic" than the ever-blinking cursor.

By the time Windows version 2 was released, Microsoft had heard every argument about not using the mouse, so it emphasized the fact that you didn't have to have a mouse to use Windows. All actions could be performed with the keyboard, though in many more steps. In Windows version 3, that's also supposed to be the case, but a few programs require the mouse for some actions. The most obvious one of these is Microsoft's own Excel—you have to have a mouse to activate the choices on Excel's tool bar, unless you get fancy with macros. Other Windows programs with tool bars may also require a mouse, further estranging those whose hands were born locked to the keyboard.

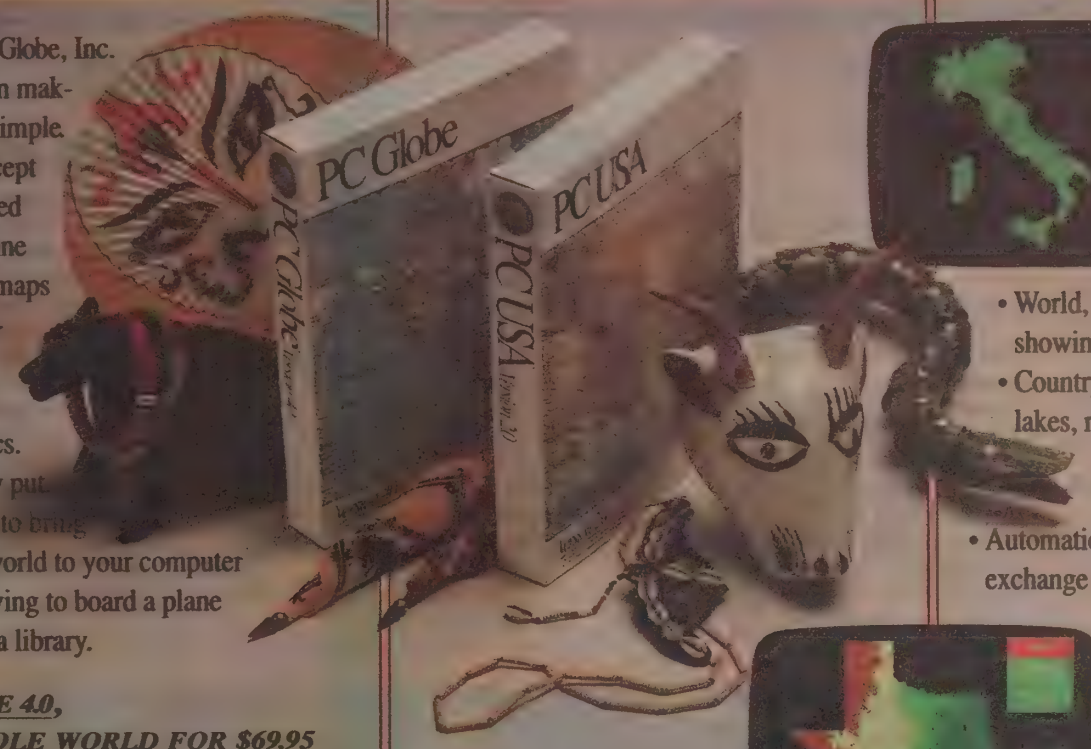
WHY THE CHARACTER-BASED USER INTERFACE IS NOT UNIVERSAL

Other software companies have adopted a similar character-based user interface of drop-down menus and dialog boxes for some of the PC programs, but most haven't. Possibly they are afraid that Microsoft's lawyers will spring a lawsuit on them, as Lotus did with Paperback Software and Mosaic. More likely, however, they think that their vision of user interface is "better" than the common one and will differentiate their product. Borland has had a reputation for having as many interfaces as it does software packages; in fact, since Quattro sports multiple interfaces, Borland may be the only company with more interfaces than products.

Lawyers being what they are, the legal question is a worrisome one. If Apple wins its case against Microsoft and Hewlett-Packard, claiming that the Windows interface violates Apple's copyright, the decision could conceivably go against anyone who uses the character-based user interface that Microsoft has adopted. After all, Judge Walker has agreed that elements like activating a window by selecting it might in fact be copyrightable. It doesn't have to be a graphic representation to mimic Apple.

Of course, Apple could simply create a licensing scheme that would make software manufacturers unafraid of their legal wrath (or, heaven forbid, let companies use the interface for free unlicensed). For the moment, however, this seems unlikely. ■

THINK OF OUR SOFTWARE AS AN ENDLESS SUPPLY OF FREQUENT FLYER MILEAGE.



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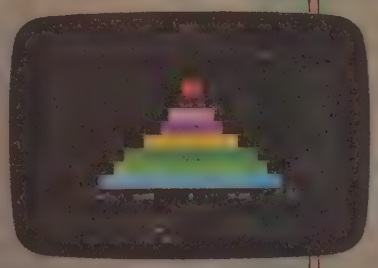

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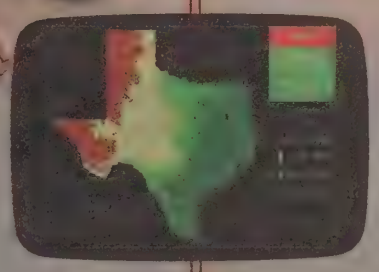

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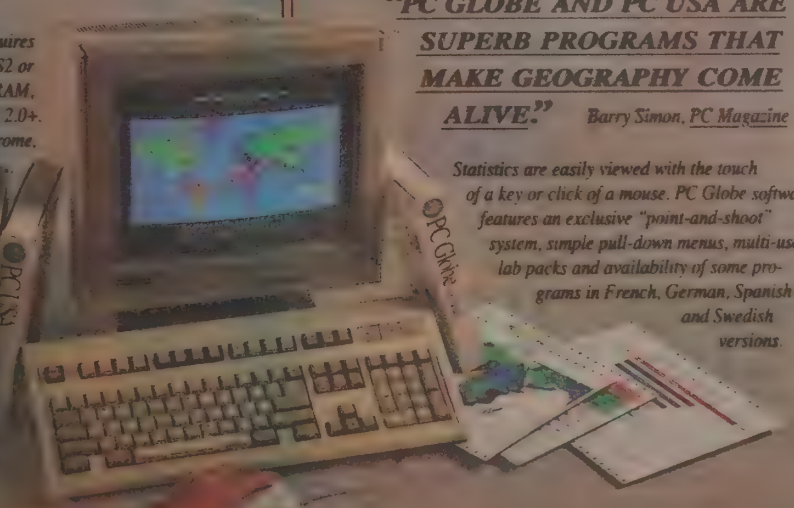

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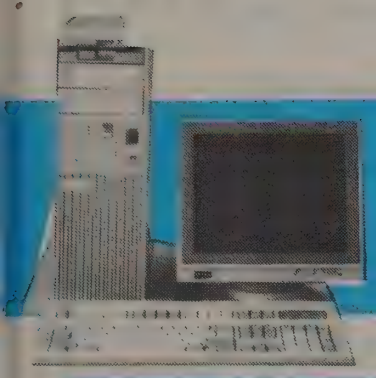

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DFI Mouse (3 Button, Micro Soft Compatible)	45
AT Jr. Case (XT)	32
AT Deluxe Case	48
Mini Vertical Case w/Power Supply	95
Vertical Case w/Power Supply	160
Colorado 120 MB Tape Back-Up	265
DFI Memo 2000	85
RAM DIP/SIPP/SIMM	CALL

Floppy Drive

Teac 360K/1.2M	$62/65
Teac/Toshiba 3.5" 720K	65
Teac/Toshiba 3.5" 1.44 MB	65

Printer

Panasonic KX-P 1180	155
Panasonic KX-P 1123/1124	245
Panasonic KX-P 1624	375

Modem

2400 Baud (Int)	$65
2400 Baud (Ext)	95
Fax Modem (4800 FAX, 2400 modem)	95
Fax Modem (9600 FAX, 2400 modem)	145

Monitor

Hyundai Mono	$70
14" Flat Screen	95
Hyundai EGA	275
Hyundai VGA .52	230
Hyundai VGA 640x480 .39	260
Hyundai VGA 3.1	285
NEC Multisync 2A	445
NEC Multisync 3D	595
Super VGA (1024x768) 0.28	315
Seiko 1440	499
Seiko 1450	595
Sony 1304	615

TERMS and CONDITIONS:

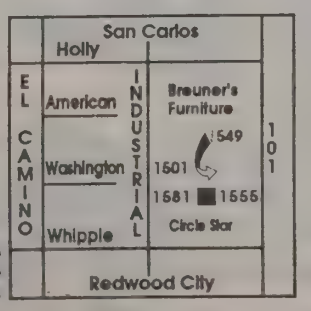
- Prices Shown Are Cash Prices
- Company P.O.'s Welcome
- UPS Shipping Daily

All prices and contents subject to change w/o notice
All brand names are registered trademarks
Co. Term on credit approval

VISA
MasterCard

NEW LOCATION

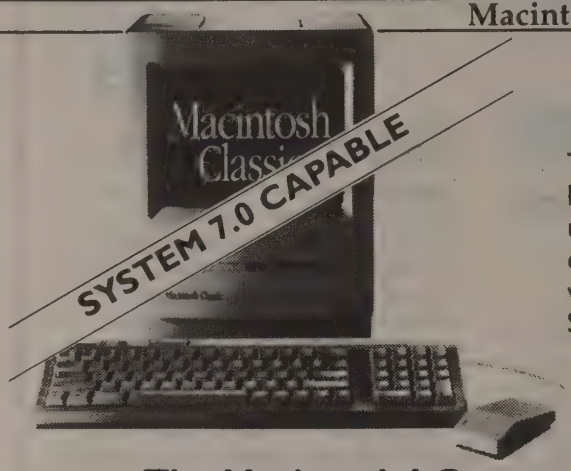
Welcome to visit our new 4500 Sq. ft. showroom! Computers, Monitors and Printers are now on display!



Located in the San Carlos Commerce Center Office Park

Best Support

Macintosh®



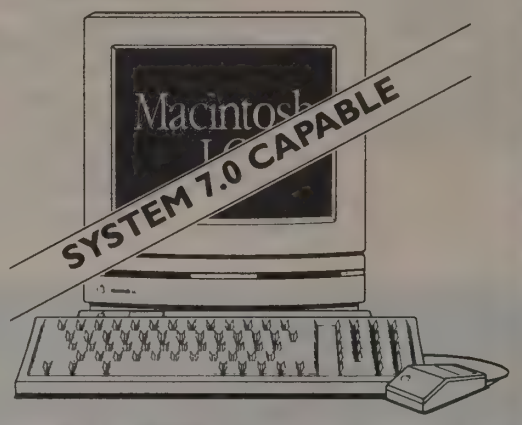
The Macintosh® Classic®

The Macintosh Classic is the ideal entry level personal computer that can be used as a home or office productivity center. This affordable computer comes with 2MB RAM, 40MB hard drive, 1 Superdrive™ and keyboard.

The Macintosh LC

The Macintosh LC is the most affordable color computer of the modular Macintosh product line. It is an excellent choice for education or business users. This new Macintosh has built-in sound capabilities and is Apple® IIe compatible. This Macintosh LC comes with 2MB RAM, 40 MB hard drive, 1 Superdrive™ and keyboard.

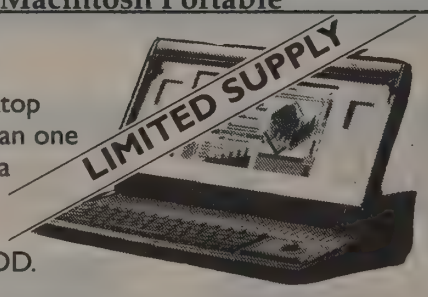
Apple IIe Card & Monitor extra.



The Macintosh Portable

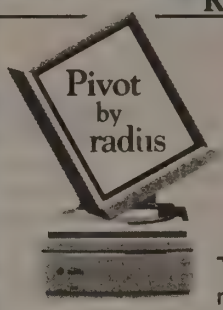
The Macintosh Portable

The Macintosh Portable is the desktop Macintosh for people with more than one desktop. The Portable comes with a new back-light, full page-width screen and is System 7.0 capable. Now with 2MB RAM and 40MB HDD.



Authorized Dealer
Authorized Service

Radius



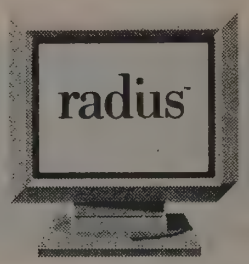
radius™

Pivot Display For Macintosh

The revolutionary full page monitor is like having two displays in one. The Pivot actually rotates between portrait and landscape orientations.

Price includes interface card. 1249.

Pivot for Macintosh IIci & IIsi 999.



19" Monochrome

Two page display with card for SE, SE/30 or Macintosh II. (CPU not included)

Now Only 1199.

21" Monochrome Display for Macintosh 1469.

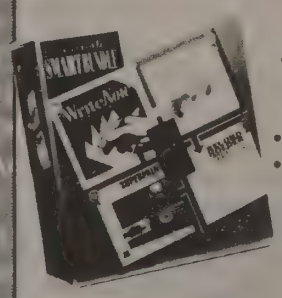
Macintosh Accessories

Hayes

Personal Modem 2400 Plus and Smartcom™ for the Macintosh

- Includes cables • Easy to install
- 2 year limited warranty.

149.



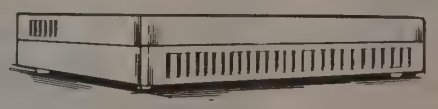
The Smart Bundle:

- Easy, powerful, and affordable...
- The smart choice in software for new Macintosh® buyers!

249.

Premier

Quiet operation, fast and reliable Premier hard drives for the Macintosh. Match one with a Macintosh Classic for an affordable starter system for students.



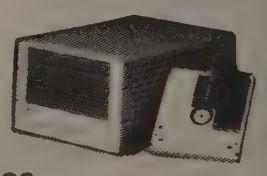
PREMIER Mac External Hard Drives

20MB.....329.

50MB.....399.

MacinStor

Featuring Quantum Drives with MacinStor's comprehensive utility software, mirroring, volume spanning, password protection and more. Also available in 40MB and 80MB.



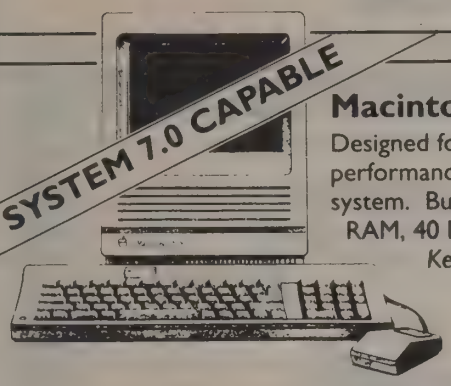
MacinStor ZFP Series

100MB.....799.

80MB.....699.

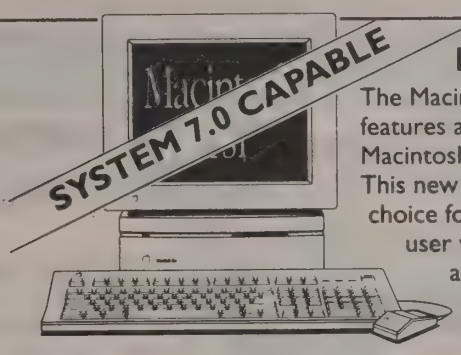
WHOLE EARTH ACCESS

BERKELEY	SAN RAFAEL	CONCORD	SAN FRANCISCO	SAN MATEO	WEA COMPUTERS
7th and Ashby 843-1700	863 E. Francisco Blvd. 459-3533	Willows Shopping Center 686-2270	401 Bayshore Blvd. 285-5244	Fashion Island Shopping Center 578-9200	3550 Stevens Creek Blvd., San Jose (408) 554-8300



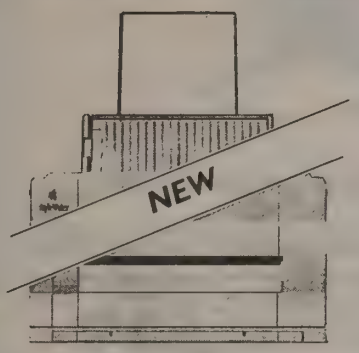
Macintosh® SE/30

Designed for people who want maximum performance from a transportable computer system. Built-in capabilties include 1 MB RAM, 40 MB hard drive and 1 SuperDrive™. *Keyboard extra.*



Macintosh IIsi

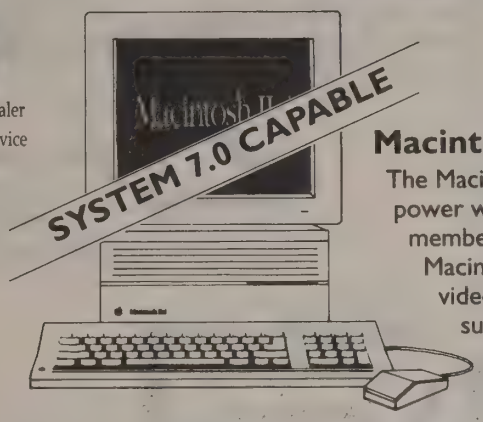
The Macintosh IIsi offers many of the features associated with the modular Macintosh family at an affordable price. This new Macintosh is an excellent choice for the business or education user who needs power, networking and growth. Comes with 3MB RAM, 40MB HDD, Microphone. *Keyboard and Monitor extra.*



Apple® StyleWriter® Printer

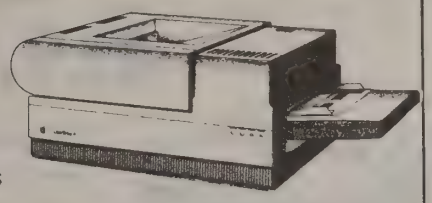
The new Apple StyleWriter Printer offers quiet operation with outstanding laser-quality printed results. Perfect for the home office.

Authorized Dealer
Authorized Service



Macintosh® IIci

The Macintosh IIci gives you power with room to grow. This member of the modular Macintosh family has flexible video support built-in to support a variety of monitors without adding a video card. *M5774 LL/A comes with 5MB RAM. Keyboard and Monitor extra.*

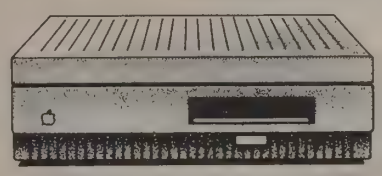


LaserWriter® II NT

The LaserWriter II NT is ideal for 4 to 6 users and offers PostScript® text and graphics that yield professional quality documents quickly and easily.

Apple, Macintosh, AppleCD SC, LaserWriter, StyleWriter, SuperDrive, TrueType and the Apple logo are registered trademarks of Apple Computer, Inc. Classic is a registered trademark licensed to Apple Computer, Inc. PostScript is a registered trademark of Adobe Sustems.

CD ROM

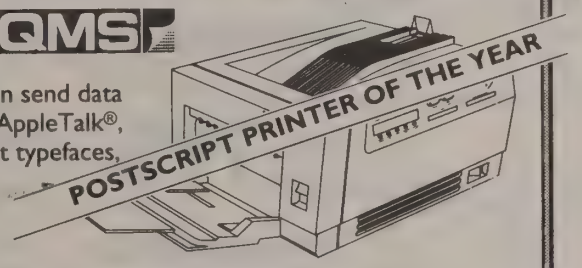


AppleCD SC® Drive

An essential part of any Multi Media system, the Apple CD SC provides fast data access; can even play audio CD's. This drive works with all Apple computers.. *#M2700/B*

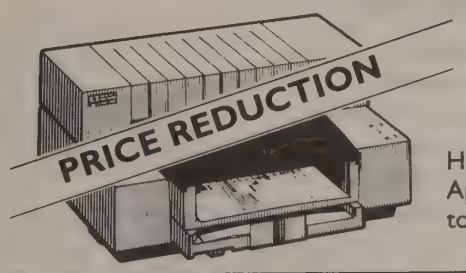
Printers

QMS-PS 410 QMS



It's true Adobe® PostScript®, and you can send data automatically and simultaneously to the AppleTalk®, RS-232 and parallel interfaces.45 resident typefaces, including Garamond.

NOW IN STOCK



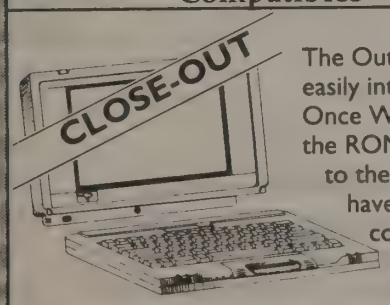
HEWLETT PACKARD

DeskWriter Printer

Hewlett-Packard's DeskWriter printer, now AppleTalk compatible, brings laser-like quality to the Macintosh line.

489.

Compatibles



The Outbound™ Laptop integrates easily into any Macintosh office. Once Whole Earth Access transfers the ROM chips from your Mac Plus to the Outbound Laptop, you will have both the lightest Macintosh compatible laptop available, and an enhanced Macintosh desktop system

Outbound Laptop

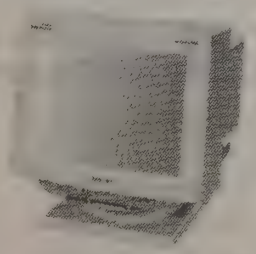
Macintosh Plus I/F w/40 MB Hard Disk

**Macintosh computer not included*

Only 2 at this price. **2495.**

Monitors

SONY

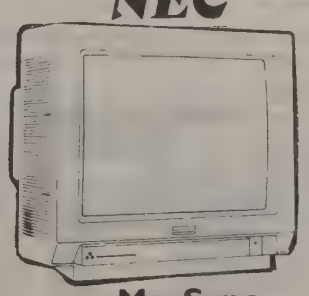


Sony 1304 HG

- Tilt and swivel • Analog cable
- 1024h 768v • .25 dot pitch • VGA, MCGA, Mac II & 8514A compatible

669.

NEC



MacSync

- 640h x 480v resolution
- .29dp • 14" diagonally with cable and tilt swivel

469.

Connecting Point

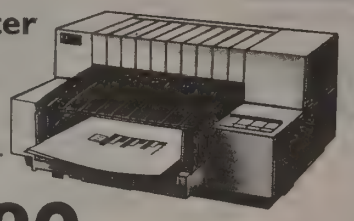
Best Prices

Hewlett-Packard

HEWLETT PACKARD

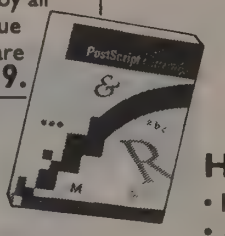
HP DeskJet 500 Printer

- Improved print quality
- Added internal fonts
- 3 year warranty
- Water resistant ink cartridges.



489.

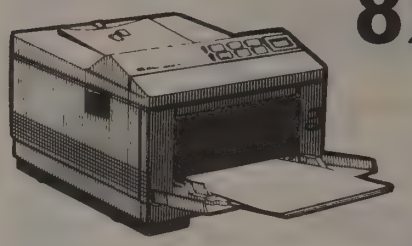
ADOBE POSTSCRIPT CARTRIDGE
-LaserJet II Owners-
You can now enjoy all the benefits of true PostScript software from Adobe **299.**

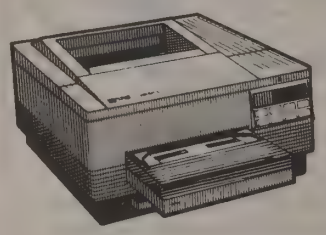


HP LaserJet IIP Printer

- Most affordable HP Laserjet printer
- Publication quality output.

829.





HP LaserJet III Printer

- Now Hewlett-Packard LaserJet Printers are PC or Macintosh compatible • AppleTalk® compatibility with optional interface
- Dependable HP performance.

HP LaserJet IIP / PostScript Printer

- Fast 4 PPM printing
- 1.5 MB RAM—includes PostScript
- Macintosh ready/ plug 'n play

#33427A

1495.

Hewlett Packard AppleTalk® for LaserJet III

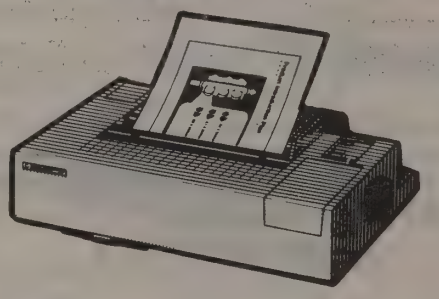
Now Available

"HP Leads the Revolution in Resolution"

HP PaintJet Color Graphics Printer

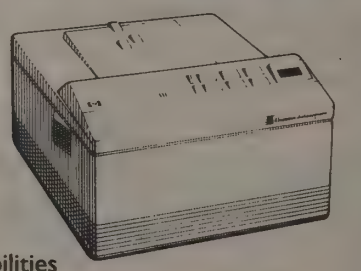
- High quality color charts & graphics
- PC or Macintosh compatible
- Wide range of software support.

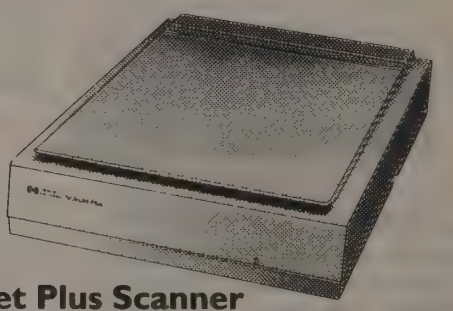
795.*



HP LaserJet IIIP Printer

- PCL5 allows you to scale type to thousands of sizes
- Versatile paper handling capabilities
- PostScript® options for PC or Macintosh



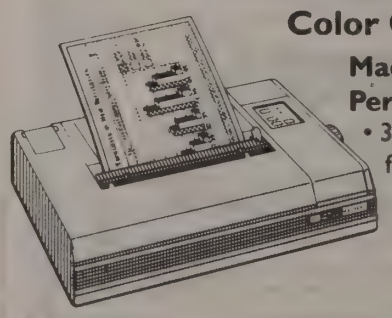


HP PaintWriter Color Graphics Printer

Made for Macintosh Personal Color Printer

- 3 times faster than HP PaintJet for Macintosh applications
- Bolder output colors
- New color software tools

795.*



HP ScanJet Plus Scanner

- 256 grey scale levels (8 bit) for high-resolution images
- Wide range of contrast & intensity control
- PC or Macintosh compatible
- Price includes interface.

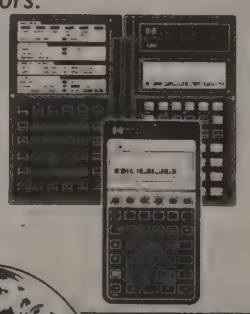
1495.

* After $200 manufacturer's rebate. See stores for details. Rebate ends May 31, 1991. Quantities limited to stock on hand. Errors subject to correction.

Calculators

Take the lead with HP's best financial calculators.

HEWLETT PACKARD

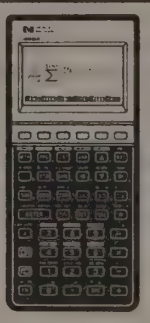


- Complete set of financial functions
- Menus and softkeys to guide you
- Algebraic or RPN entry

Come see it today.

HP 17BII Financial Calculator 99.

HP 19BII Financial Calculator..... 149.



Come see it today.

Power-users— take the lead with the new HP 48SX!

HP 48SX Scientific Expandable Calculator

- Over 2100 built-in functions
- HP EquationWriter application
- Graphics integrated with calculus.

HP calculators- the best for your success. **325.**

WHOLE EARTH ACCESS

BERKELEY	SAN RAFAEL	CONCORD	SAN FRANCISCO	SAN MATEO	WEA COMPUTERS
7th and Ashby 843-1700	863 E. Francisco Blvd. 459-3533	Willows Shopping Center 686-2270	401 Bayshore Blvd. 285-5244	Fashion Island Shopping Center 578-9200	3550 Stevens Creek Blvd., San Jose (408) 554-8300

Epson

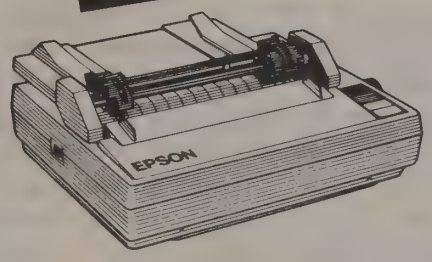
TWO YEAR WARRANTY ON ALL EPSON PRINTERS

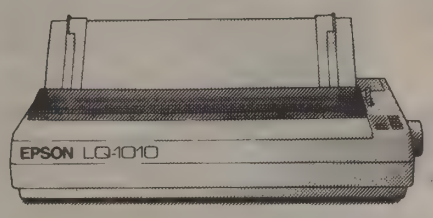
EPSON®

LX-810

- 9 pin • SmartPark™ paper handling
- 200 CPS super draft • 30 CPS NLQ
- High resolution graphics.

179.





LQ-1010

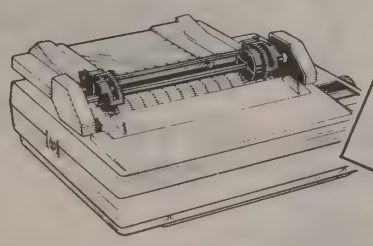
- 180 CPS draft, 60 CPS letter quality • 24 pin, 360 x 360 dpi graphics • SmartPark™ and SelectType • Wide carriage

429.

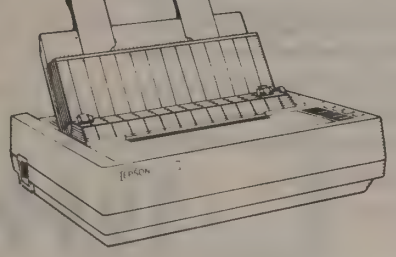
LQ-510

- Featuring SmartPark™ paper handling • 180 CPS draft • 56 CPS letter quality • 2 resident letter quality fonts

259.



FREE MULTI-MODE FONT WITH PURCHASE OF LQ-510



LQ-860

Epson's newest letter quality color printer

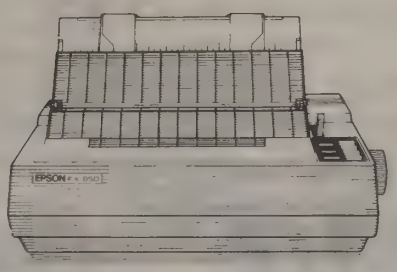
- 300 CPS draft
- 98 CPS NLQ

IN STOCK

FX-850

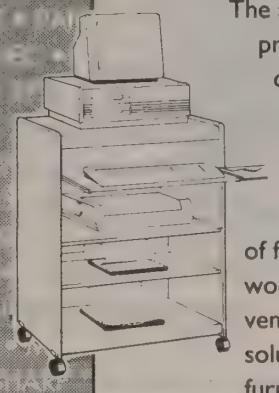
- 9 pin dot matrix • 264 draft 54 NLQ
- Push tractor paper park for single sheet feed.

369.



Furniture

All-In-One Mobile Microcomputer Center



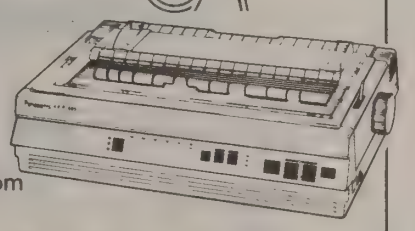
The answer to your storage problem. This space saver is designed to organize your entire microcomputer system- including your printer- in less than three square feet of floor space. Crafted from wood solids and matching veneers, this is a high quality solution for your computer furniture needs.

Panasonic

Panasonic Office Automation OA

KXP-1695

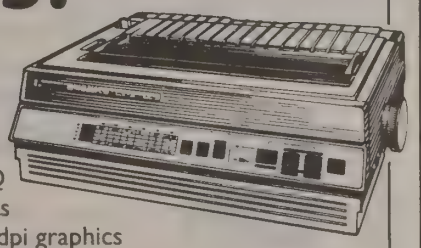
- 9 pin • EZ set control panel
- 330 CPS draft • 66 CPS NLQ
- 8 resident fonts
- 16.5" wide carriage
- Push/pull tractor • Rear, bottom and front paper feed.



395.

KX-P1124i

- 24 pin • EZ set control panel
- 300 CPS draft • 100 CPS NLQ
- 36 CPS SLQ • 8 resident fonts
- Push/pull tractor • 360 x 360 dpi graphics
- 2 year manufacturer's warranty



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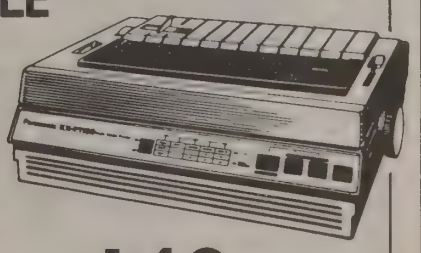
KXP-1180

- 9 pin • EZ set control panel
- 192 CPS draft
- 38 NLQ • 6 resident fonts
- Push/pull tractor • 11.7" carriage.



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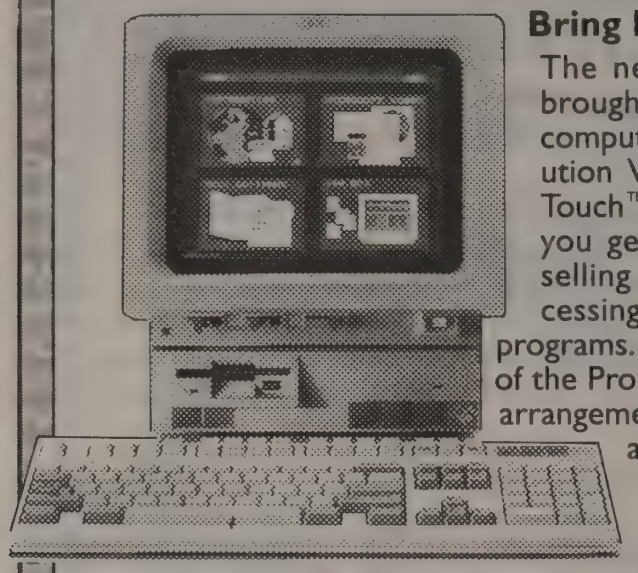

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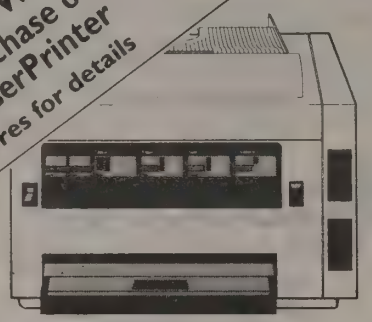

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- HP comp.

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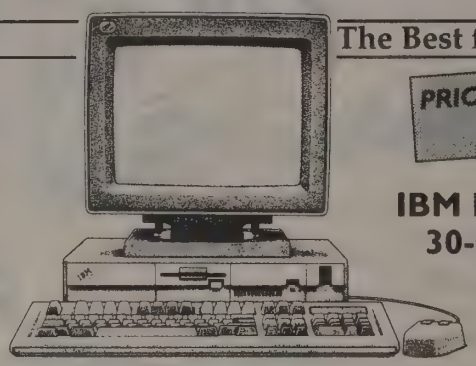

IBM PS/2® 30-286

- 10 Mhz 80286 processor
- 1 MB RAM expandable to 16MB RAM
- 1.44MB floppy drive
- VGA graphics on board.

Monitor extra

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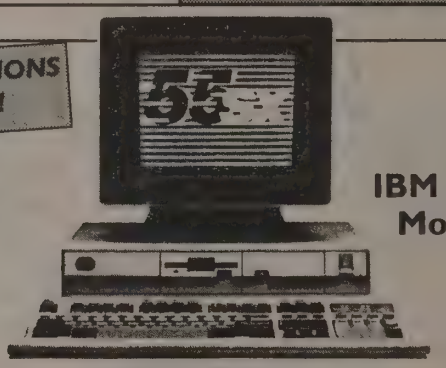
PS/2 30-286 30 MB **1599.**



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- 80386SX 16 Mhz processor
- VGA on board
- 2MB RAM expandable to 16MB
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PS/2 Available in Berkeley and San Jose Stores Only

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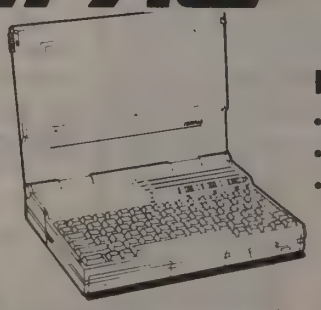

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- 1.44 MB floppy drive
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- 12 Mhz 80286
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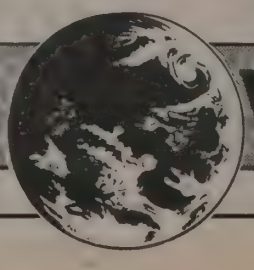

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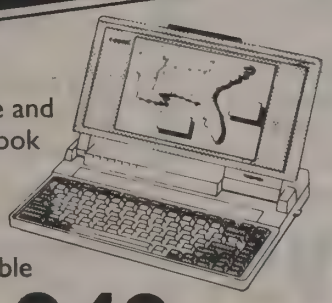

Toshiba's affordable and easy to use Notebook PC for today's business-person on the move. Plenty of comfortable features.

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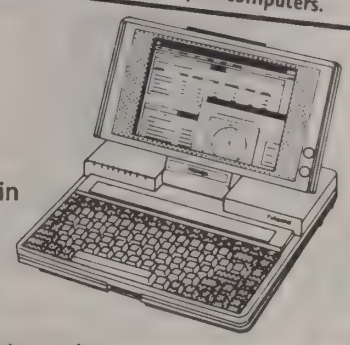

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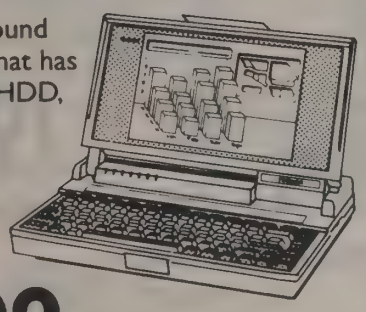

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- Toshiba's most powerful notebook computer
- High performance—386SX™ processor
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Limited Supply **2699.**

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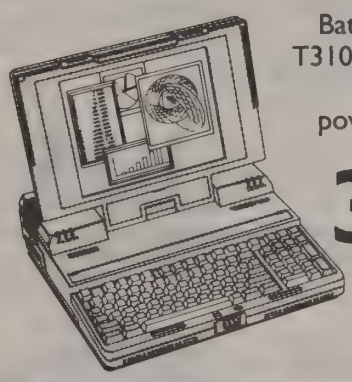

Battery-operated T3100SX. Freedom to use 386SX power anywhere.

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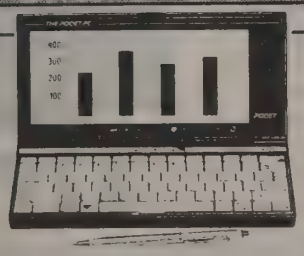

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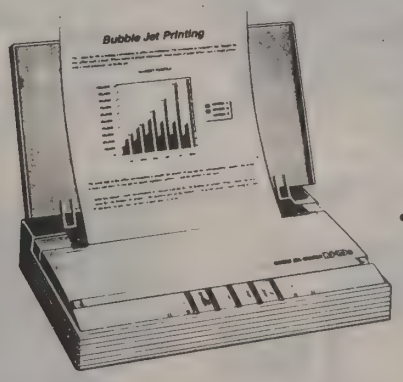

Canon BUBBLE JET PRINTER BJ-10e

- Portable 300 dpi printer
- Optional sheet feed.

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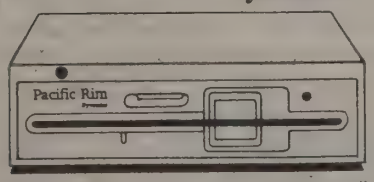
Pacific Rim Systems



Pacific Rim Systems' external 3.5" and 5.25" floppy drive subsystems are available for every PC

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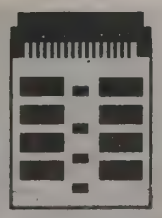

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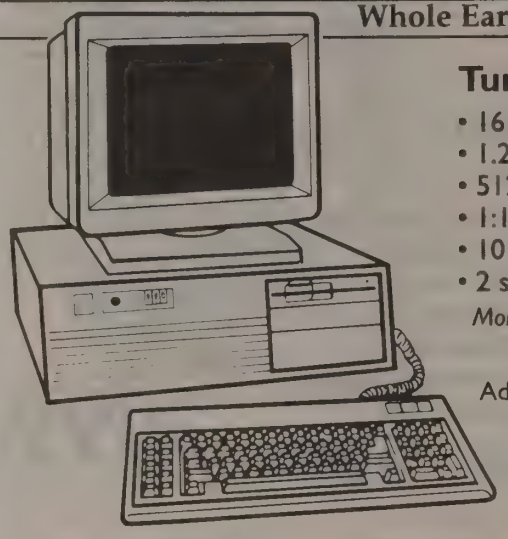

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- 16 Mhz 80286
- 1.2 MB floppy
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- 1:1 hard drive controller IDE
- 101 keyboard
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Monitor, display card extra

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- 16Mhz 386SX
- IMB RAM
- 1.2MB floppy
- 1:1 hard drive controller IDE
- 101 keyboard
- 2 serial 1 parallel port

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- IMB RAM • 40 MB hard drive

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- 64k cache
- 101 keyboard

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WEA S486-25 Standard

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- I/O, 1.2MB FD, 101 keyboard
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- Desktop case •AMI BIOS
- 64 K RAM cache, upgradable to 256K
- 1-32/8 bit slot
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- VGA color monitor
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- .25mm aperture grid

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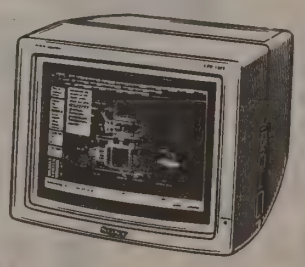

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- 14" VGA color
- .31 dot pitch
- Includes tilt & swivel base

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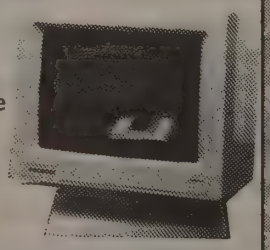

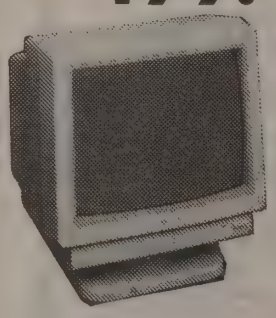

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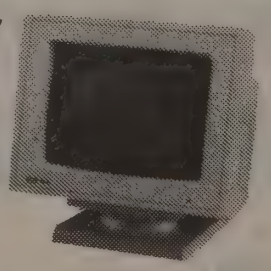

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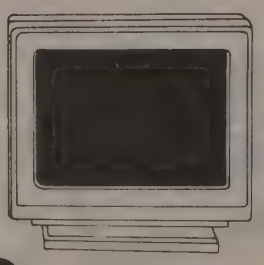

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12" Amber Monochrome

- Non- glare • 720h x 350v with tilt & swivel and cable

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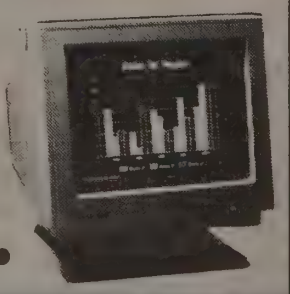

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Sigma VGA Legend

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- Interlaced or non-interlaced
- No switches or jumpers
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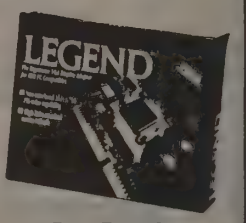

229.

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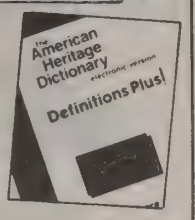

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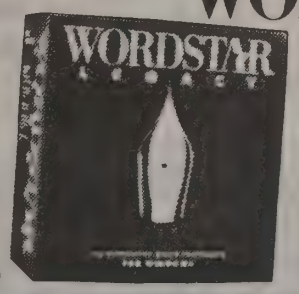

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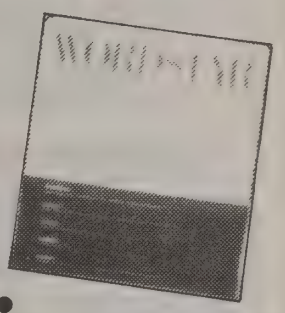
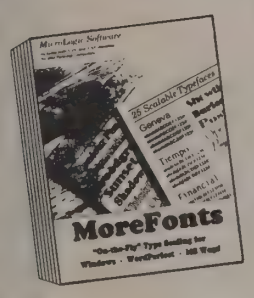


MicroLogic Software

MicroLogic Software



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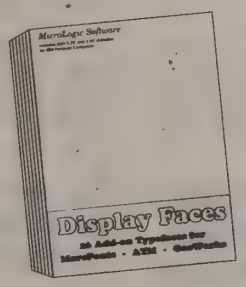

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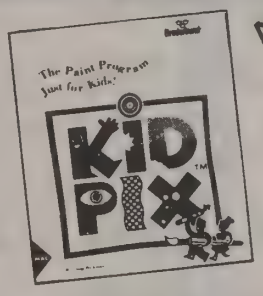

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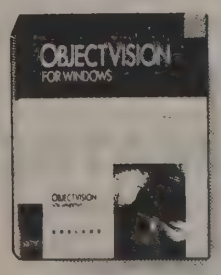

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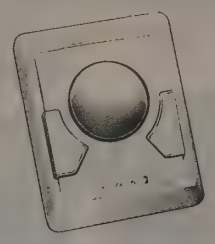

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3	4 Beginning MS Works Mac 2 pm -5 pm....$29.	5	6 Beginning MS Excel Mac 2 pm -5 pm....$29.	7	8
10	11 Intermediate MS Works Mac 2 pm -5 pm....$29.	12 Intro to Windows 10 am -1 pm....$49.	13 Inter. MS Excel Mac 2 pm -5 pm....$29.	14 Beginning MS Word 4.0 Mac 2 pm -5 pm....$29.	15 Intro to Mac 12:30 - 2pm.....Free Intro to DOS 2:30 pm -4 pm....Free
17	18 Advanced MS Works Mac 2 pm -5 pm....$29.	19 Intro to Pagemaker Mac 10 am -5 pm....$179.	20 Advanced MS Excel Mac 2 pm -5 pm....$29.	21 Intermediate MS Word 4.0 Mac 2 pm -5 pm....$29.	22 Intro to Windows 10 am -1 pm....$49.
24	25 Intro to Desktop Publishing 2 pm -5 pm....$29.	26	27 Advanced MS Excel Mac 2 pm -5 pm....$29.	28 Advanced MS Word 4.0 Mac 2 pm -5 pm....$29.	29 Intro to Mac 12:30 - 2pm.....Free Intermediate Macintosh 2 pm -5 pm....$49.

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What Good Is A GUI If You Can't See It?

Windows & Mac For The Non-Sighted Professional

BY ADAM GAFFIN

Sometimes, when Vicky Winslow is working on her computer, she turns off her monitor. Winslow, a system administrator at an IRS office in New York, doesn't like the feeling of people looking over her shoulder.

Winslow is blind. She can navigate her computer as well as any sighted person, though, using character-recognition software and a speech synthesizer.

Perfected over the past ten years, these programs and devices have given the blind a new sense of freedom. These tools let non-sighted users do everything from reading and responding to mail to managing finances to working spreadsheets and databases—and connecting with the outside world by modem.

But now many blind people say that freedom is threatened—ironically, by programs meant to make computing easier for the sighted. Graphical user interfaces such as Windows and the Macintosh operating system simply do not work with speech synthesizers, because they rely heavily on mice and icons, rather than the ASCII input and output that drive voice synthesizers.

"In a sense, it's like having built a bridge between access and no access, and now somebody puts a land mine at the bottom and it's ticking," says Charles Crawford, commissioner of the Massachusetts Commission for the Blind, who is both blind and an avid computer user.

"Blind computer users are pretty much being left in the dust," Winslow says. "As a user, I see more and more programs being rewritten to reflect this: lots of windowing, which speech does not handle all that well; and, of course, all those icons. Sighted programmers I talk to almost take it personally: 'We're sorry you have a disability, but why should we have to program down to the lowest common denominator?' "

"A number of people within IBM have had to change jobs because their departments changed to OS/2 and Presentation Manager," says James Thatcher, an IBM researcher working on a system that would let blind employees use GUIs such as Presentation Manager.

Apple Computer is funding work to develop a system for the blind, and a number of smaller companies, such as Telesensory Systems Inc. of Mountain View, are working on projects.

But some say the pace is too slow and that the blind risk being left behind, again, by their sighted co-workers and competitors.

Current efforts are just "stabs in the dark," Winslow says. "We need something big." Crawford adds that because there are relatively few blind and visually impaired people in the country—under 1.5 million—most companies have just not paid much attention to the market.

"There is a legitimate concern and fear among computer users who are blind," says Kelly Ford, a blind computer researcher at the University of Wisconsin's Trace Research Center, which is working with Berkeley Systems—using financial support from Apple Computer—to develop a system that would let the blind navigate a Macintosh screen.

ASCII AND SPEECH SYNTHESIS: USEFUL BUT DATED

When personal computers became popular in the late 1970s and early 1980s, companies and hobbyists quickly came up with systems that could take the ASCII output of Apple II or IBM compatible screens and feed them into a speech synthesizer. Because these computers used a "command line" to type in data, the blind were able to control their computers through their keyboards.

While in front of her computer, Winslow wears a pair of headphones that look like a Walkman. The voice synthesizer to which they are attached "talks" at six hundred words a minute—far faster than the average person can talk, but also faster than the average person can read. Winslow recalls the headaches she got the first week she used one of the devices, but says that after some practice, one gets used to the monotone. Because of its fast speed, the device lets her maneuver around her computer as fast as a sighted person.

Since he "discovered" computers in 1984, Crawford has set up a local-area network in the commission's offices, learned to write dBASE programs—he has written a series of shareware programs that let the blind do everything from balance their checkbooks to keep track of police-scanner frequencies—and set up a public bulletin-board system that includes a job database. Until recently, Crawford and other blind commission officials had to have a sighted person read faxes to them. But now, with a fax board and optical-character-recognition software, he said, blind staffers can read and respond to faxes by themselves.

But GUIs work fundamentally differently: they paint pictures on the screen and work best when a user points a mouse at icons and clicks on them.

Graphical user interfaces such as Windows and the Macintosh operating system simply do not work with speech synthesizers, because they rely heavily on mice and icons, rather than the ASCII input and output that drive voice synthesizers.

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Adam Gaffin writes about personal computers for the Middlesex News *in Framingham, MA.*

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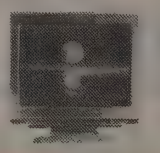

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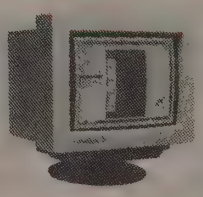

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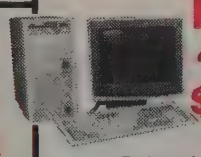

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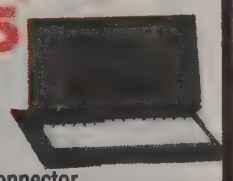

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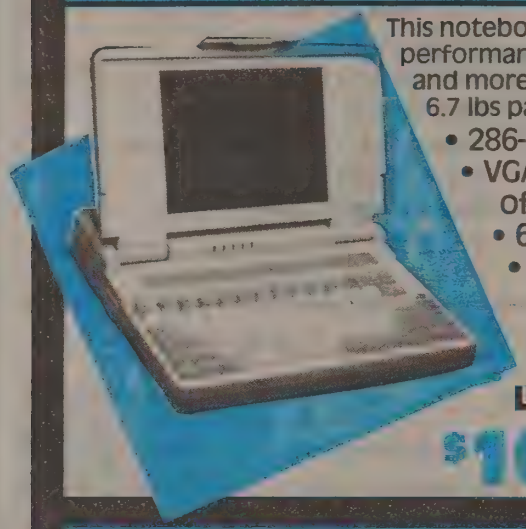

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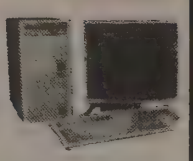

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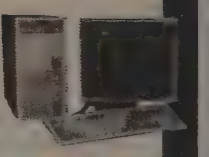

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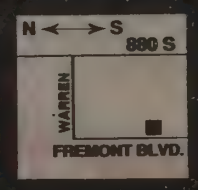

"A number of people within IBM have had to change jobs because their departments changed to OS/2 and Presentation Manager," says James Thatcher, an IBM researcher working on a system that would let blind employees use GUIs such as Presentation Manager.

"If you're trying to compete in a world where everybody has a word processor and you're told you have to use a pen and paper to work, you certainly are not going to be as efficient," says David Mansoir, product manager for Braille and speech products at Telesensory, who recalls having to have a sighted person read his computer screen for him when he majored in computer science between 1979 and 1983.

Not only are blind people at a disadvantage because they cannot use the software available to sighted workers, but they fall further behind because most Windows programs are easier to learn, for those who can see them, than their DOS equivalents, in part because of their common interfaces, according to Mansoir.

But it is these common interfaces that may hold out the most hope for adapting GUIs to the blind—even though there is already a split in the field between companies and researchers betting they can come up with sophisticated mouse-based systems and those who feel the future lies in speech synthesizers.

THE "VISUAL" APPROACH: THE TACTILE MOUSE

Because each program does have the same interface, programmers will no longer have to worry about where and how menus and dialog boxes pop up, Thatcher says.

Apple is helping to fund a joint project by Berkeley Systems and the University of Wisconsin's Trace Research Center, known as "System 3," to develop a "tactile mouse" interface for the blind.

At the heart is Berkeley's Outspoken program, which can translate much of a Macintosh's text output into a form usable by a speech synthesizer.

This is coupled with a graphics tablet on which the user moves a "tactile mouse" which creates a raised display that blind users can "read" by hand. On the top of the tablet is a piece of machined plastic. Run the mouse over it, and it becomes a series of drop-down menus. Ford says all of the components in the system are already on the market.

He adds the system, when perfected, will let the blind use graphics programs: they will be able to draw and "read" everything from floorplans to pie charts.

All this gets around the problems of converting a window into voice, he said, adding, however, that the Outspoken part of the system will let the blind read text files, while he and other researchers are working on a stereo sound system to help users tell where they are on the screen based on the direction of the sound.

"It would be hard to recreate in ASCII an image of a folder," he says. Besides, he adds, ASCII-based computers are sort of like Model Ts: they might still run today, but you'd hardly drive one for the performance.

Blind people shouldn't be forced to stick with an outmoded, text-based technology that can only do one thing at a time, he says. What happens ten years from now when IBM no longer supports DOS?

THE SPEECH SYNTHESIS APPROACH

Winslow and Crawford, though, say Outspoken is simply too slow. Crawford says when he tried it on one of his children's Macintoshes, he couldn't wait to get back to his IBM clone.

Ford stresses the fact that anybody learning to use a new system will take time to get up to speed. Gary Moulton, manager of disability solutions for Apple, says he knows one blind engineer at Berkeley who "is as quick in his ability to use a Macintosh as a sighted person."

Thatcher said there are ways to adapt existing voice-synthesizer technology to windowing software and questions the need to let the blind feel their way around a screen.

Unlike System 3, IBM's Speechreader for Presentation Manager relies on the fact that "anything you can do with the mouse you can do with the keys," he says, adding that this includes a special keypad in addition to the normal keyboard.

Thatcher says it doesn't really matter where windows pop up on the screen, as long as a user can easily move from one to the other: "People don't really care what their desktop looks like." Some blind people are also unable to "read" a tactile display, he adds.

With the extra keypad, "there are a thousand different ways" a user can move around the screen and among windows. Some thirty blind IBM employees and three people outside the company are now using the system, Thatcher says, adding that a couple have already told him that without it, they would have been forced to take jobs in other departments.

The goal, according to Thatcher, is to create a core program that can then be adapted to different operating systems. Once the OS/2 system is perfected, he says, he and his team will turn their attention to other systems, including X-Windows under IBM's variant of UNIX, and even Microsoft's Windows.

"We have talked (with Microsoft), but we've only talked in broad-brushed strokes," he says. "We came to the conclusion that, yes, it would be doable." Whether Microsoft would actually provide the programming "hooks" on which one could hang a voice-synthesizer program, however, is another question, he admits.

Because of the rapid growth of Windows and programs that operate under it, Microsoft's support for any product would be vital. Mansoir, however, says the company has so far shown little interest in the problem: "Microsoft, unfortunately, hasn't been very cooperative. I really don't know why that is a problem. We would be spending all the money on research and development. What they're forgetting is the fact that blind people need this in order to secure employment."

Crawford says companies that prove reluctant to adapt their products to the blind could one day face legal action under the 1990 federal Americans with Disabilities Act, which requires equal access to services for disabled people.

Microsoft officials could not be reached for comment.

Crawford says one hope is Unicode, a new attempt to create a sort of mega-ASCII encompassing the characters of all the major languages, including Chinese and Japanese. It should not be too hard to include an additional set of codes or instructions that could translate mouse-type commands or icons into a set of instructions a voice synthesizer could deal with.

"I think it's going to take a variety of approaches," says Winslow. "It's a question of making people aware of what's going on.... It's not just getting us a gizmo and hoping we go away." ■

RESOURCES:

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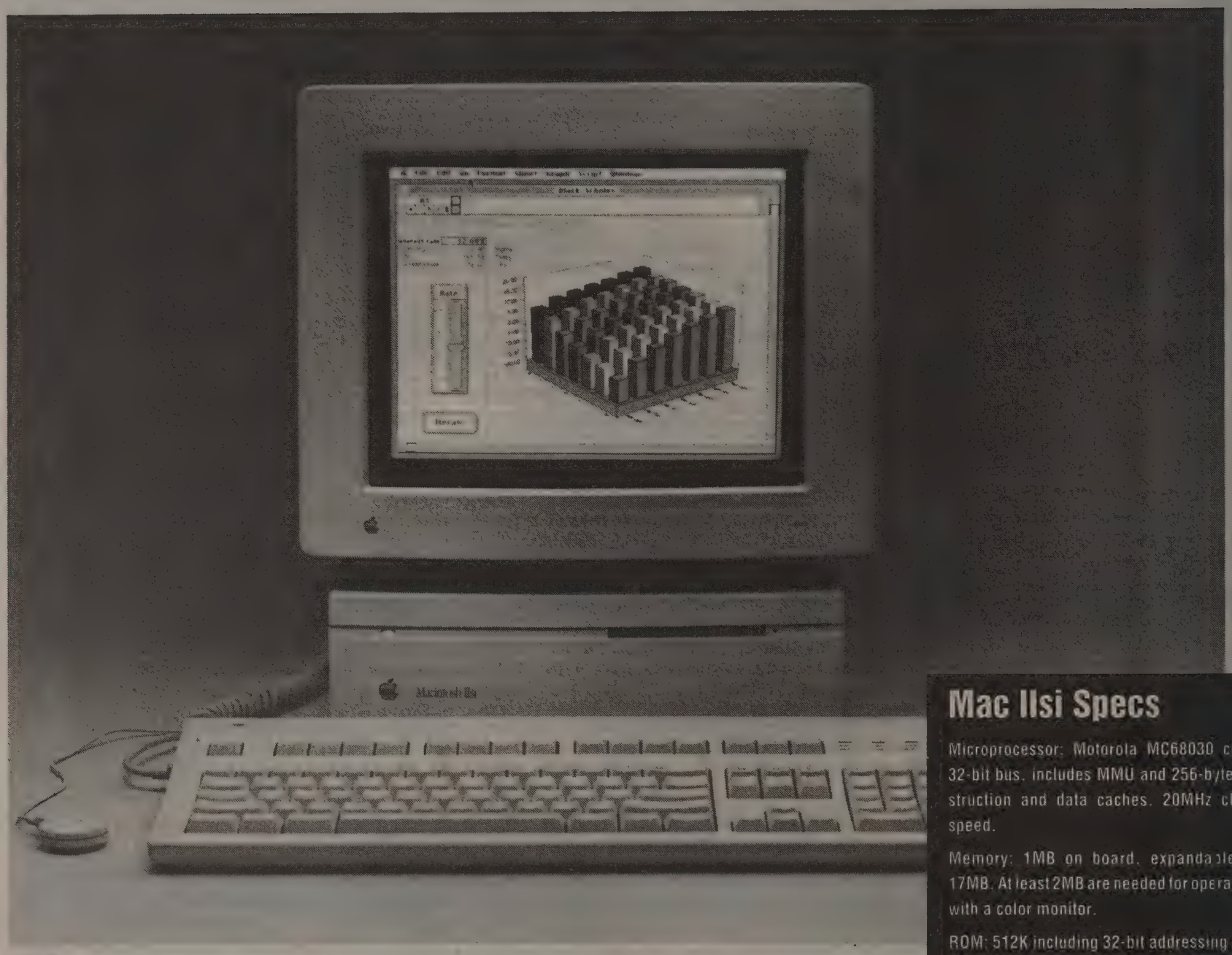
Macintosh IIsi

Wimp Machine Or VolksMac?



BY MIKE MARKOWITZ

The Macintosh IIsi is the top of the line among the "low cost" models that Apple introduced some months ago. My favorite rumor about the computer is that "si" stands for "simply irresistable."

Like so many things in life, the meaning of "Low Cost" is relative. A IIsi with 2MB of RAM and a 40MB hard drive (the standard configuration) lists for about $3,700 at this writing, with a student discount price around $2,600—typical street prices lie somewhere in between. With 5MB of RAM and an 80MB hard drive (the only other standard configuration) the list price jumps to $4,569. Monitors are also extra.

The limited choice of configurations is irritating. There is no option to buy a bare-bones system (like 1MB RAM, no hard drive) and beef it up with your own third-party or recycled components. In Apple's defense, it should probably be noted that fewer options make for simpler marketing, distribution, and inventory management. This helps to hold down the ultimate cost to the user —this was Henry Ford's justification for offering the model T only in black.

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FEATURES

Unlike the Mac Classic, the basic IIsi configuration does not include the keyboard. A microphone that plugs into the IIsi's new audio input port is included in the package. The round, flat microphone looks like a toy, but the quality of sound recording is impressive, at least to my untutored ears. Packed in with the microphone is a simple Y-adapter cable that lets you connect a stereo system or CD player to the sound input port.

The IIsi has a built-in video port that

Mac IIsi Specs

Microprocessor: Motorola MC68030 chip, 32-bit bus, includes MMU and 256-byte instruction and data caches. 20MHz clock speed.

Memory: 1MB on board, expandable to 17MB. At least 2MB are needed for operation with a color monitor.

ROM: 512K including 32-bit addressing and 32-bit QuickDraw. A "ROM SIMM" socket on the motherboard provides for easy future upgrades.

Storage: One Apple 1.4MB floppy SuperDrive, one 1/3 height 40 or 80MB internal SCSI hard drive.

Video: Up to 256 colors on Apple 12" RGB monitor (512 x 384 pixels)
Up to 256 grays on Apple 12" monochrome monitor (640 x 480)
Up to 256 colors on Apple 13" High-res RGB monitor (640 x 480)
Up to 16 grays on Apple 15" Portrait monitor (640 x 870)

Ports: Apple desktop bus (keyboard and mouse), DB-15 video output, two mini-8 serial ports (modem and printer), DB-25 SCSI port, external floppy disk drive port, audio out (stereo), audio in (mono).

Power supply: 100 watts maximum.

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supports a variety of Apple and third-party monitors. The system I evaluated had a new Radius Pivot monitor which required its own software (a CDEV), which was extremely easy to install.

The IIsi has 1MB of RAM soldered to the motherboard and one bank of four SIMM sockets, and it is quite particular about what you can put in them—no mixing of different sizes. Memory chips rated at 100ns or faster are required. My friend purchased Apple's 2MB RAM upgrade kit, and was stuck with four leftover 256K SIMMs we had to remove to install the upgrade. The design of the SIMM sockets is greatly improved—in place of the flimsy, molded plastic latches that always broke off on earlier Macs, the IIsi SIMM sockets have springy, indestructible steel latches. Bravo for the details.

Unlike the LC, the IIsi does not have a special socket for video RAM—the video memory is managed as a chunk of system RAM. Thanks to the high speed of the computer (20MHz) this causes no noticeable performance impairment.

Another nice detail is the computer's lift-off lid, secured by one cross tip screw. For the first time since the Apple IIe, we have a cover that is easy to remove and replace—a feature the IIsi shares with the Mac LC.

The IIsi has one dual-personality slot that requires a $249 adapter in order to accommodate a card. The card sticks out over the motherboard at a right angle to the adapter. The adapter comes in two versions—one takes cards designed for the Processor Direct Slot of the Mac SE/30, the other takes NuBus cards designed for the Mac II family. In both cases, the adapter also provides the Motorola 68882 math coprocessor chip that is absent from the IIsi motherboard. According to folklore, the math coprocessor is really only needed if you use software that relies on floating-point arithmetic. High-end CAD software, many astronomy programs, and statistical software might be examples. Microsoft Excel 2.2 also expects to find a math coprocessor and balks if it doesn't find one.

It was a pleasant surprise, in unpacking the IIsi, to see that Apple is beginning to ease up on its wasteful and extravagant overkill in packaging design. Instead of a styrofoam sarcophagus, the manuals were packed in a modest cardboard box. There was a little less maniacal shrink-wrapping of packages inside shrink-wrapped packages inside other shrink-wrapped packages. Various system disks and utilities were simply and logically organized in a single folder. Bravo Apple.

Priced just a little too high to compete effectively with 386 clones, the IIsi is a good choice for Macintosh offices where the installed Plus or SE Macs are showing their age.

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Our IIsi came with the hard drive already formatted and System 6.0.7 and HyperCard 2.0 installed. There is no hard drive activity light, just a single green LED that tells you the power is on.

The Macintosh IIsi is a handsome computer. The system unit weighs in at 10 lbs. and measures 4" high, 12.4" wide, and 14.9" deep. The footprint is small, and a slight curve along the front edge softens the boxy look that makes so many computers ugly.

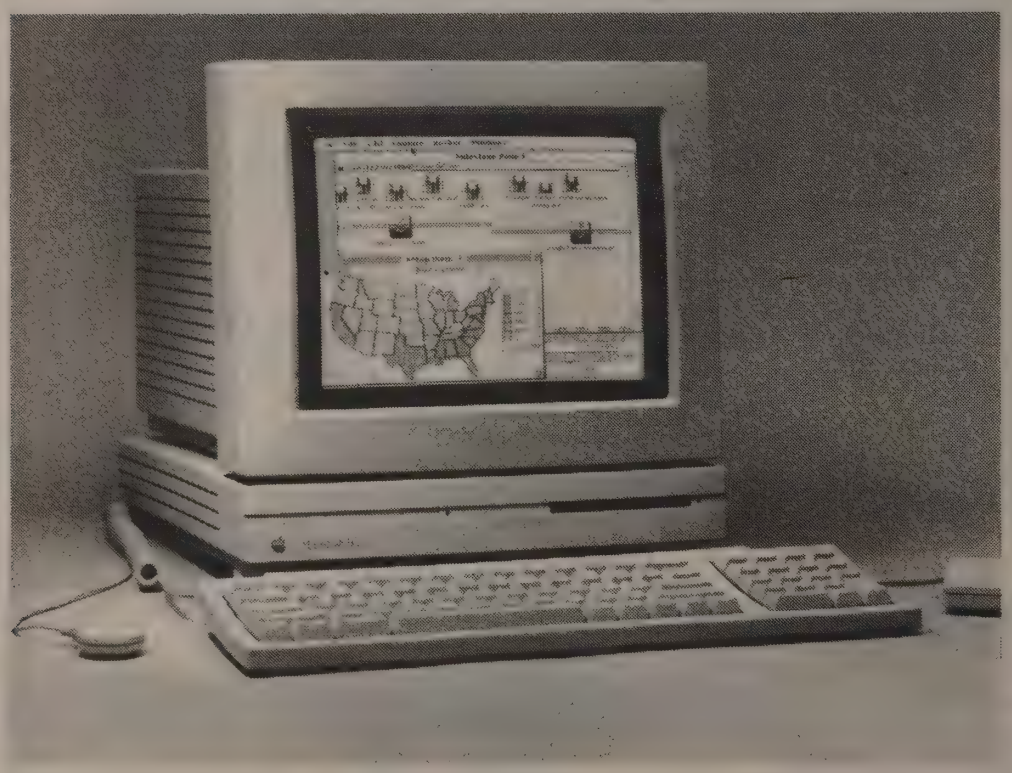
There is a three-prong power outlet, so that a single power switch turns on both the computer and the monitor. (The Mac LC lacks this feature). The interrupt and reset buttons, which are a separate, easy-to-lose piece of molded plastic on some other Mac models, are permanent fixtures on the IIsi.

WHO'S IT FOR?

Priced just a little too high to compete effectively with 386 clones, the IIsi is a good choice for Macintosh offices where the installed Plus or SE Macs are showing their age. The IIsi will be a perfect match for System 7.0, since its working memory can be expanded to an incredible 17MB, using the 4MB SIMMs that are supposed to become affordable Real Soon Now. For power users with an array of exotic peripherals, the single slot may be unacceptable; but on most of the Mac IIs that I've seen in the last few years, six slots were mostly just so much expensively packaged air. ■

Macintosh LC

Affordable Color On The Mac



BY MARY EISENHART

When our review unit arrived from Apple some months back, its natural destination was the boss's desk. After all, the boss had been getting by with an ancient Plus and a hard drive dating from a period when most Apple engineers were probably still in high school. Also, the boss was a perfect example of the customer the LC's aimed at—a Mac-using executive who needs a machine at home and at work, and who also has several children and a hefty investment in Apple II software. (We'll address the matter of the Apple IIe card for the LC in a later issue.)

However, the main thing the boss does with his Mac is keep his daily calendar and run spreadsheets. So when he's on the road we sneak into the office and put the machine through its paces.

FEATURES

The 68020-based LC has 2MB of RAM and a 40MB hard disk. The system we're using includes Apple's new 12" monitor with 8-bit color (on the motherboard; to get 8-bit color on the 13" hi-res RGB monitor, you'll need a video card). Depending on your preferences, you may want to consider other monitor options than the 12"—its display features fewer and larger pixels (512 x 384 compared to the 13" monitor's 640 x 480). On the one hand, this makes the screen considerably easier to read. On the other, if you've been using other Macs before, you'll probably find the not-quite-WYSIWYG display a little disconcerting, since what's on the screen will print smaller. If it's not crucial to have a screen image precisely the same size as your finished page, this shouldn't be a problem; and the 12" monitor is attractive and flicker-free. It also fits the compact CPU box perfectly; the entire system takes little more desk space than the Plus that used to be there, and performs a lot better.

Like the other machines in Apple's low-cost Mac line, the LC comes with the Apple Keyboard II. Since there's only one ADB port on the machine, it's necessary to plug the keyboard into the computer and the mouse into the keyboard, which, depending on your typing style, may be a nuisance and may not matter at all.

If you're used to the Apple Standard or Extended keyboards, you might not like the feel of this keyboard, which is relatively mushy and unresponsive and just harder to type on. However, keyboards, more than most computer products, are largely a matter of personal taste; when I bought my Mac II I hated the Standard keyboard and only reluctantly abandoned the one from my 512, and now I'm complaining about this one. The LC supports the use of the other keyboards (subject to the fact that you still have to plug the mouse into the keyboard rather than the CPU), so if you like the feel of the Standard or Extended better, it's well worth the few extra bucks.

PERFORMANCE

Since we figured the machine wasn't getting much of a workout running a little Sidekick and Excel, we loaded it up with a few known disk-

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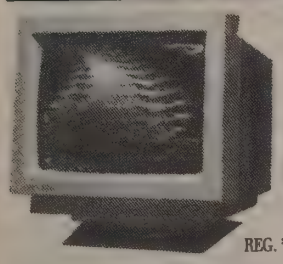

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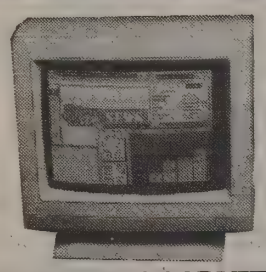

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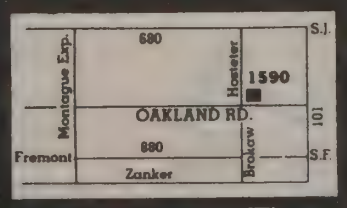

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and RAM-intensive programs from the art department, in an attempt to manufacture walls and hit them. (Excel, by the way, may refuse to run on this and the other low-end Macs because it's expecting a floating point coprocessor, but there's a free fix from Microsoft.)

In general, we've concluded that if what you really need is a high-powered graphics workstation, you're better off with either an si at the low end or a maxed-out fx at the high end—the initial investment is more painful, but you'll make up for it in efficiency almost immediately. However, for anything short of heavy production requirements and monumental number-crunching, the LC performs pretty nicely.

Would-be buyers who intend to run PageMaker on this configuration should probably give the program a rigorous test run at the computer store before making a decision. PageMaker 4, for instance, won't open at all under standard 6.0.7 MultiFinder settings on a two-meg machine, and deadline is not the time to find this out. Both PageMaker 3 and PageMaker 4 open fine under regular Finder, although both are slow, PM4 excruciatingly so. (However, for comparison purposes, it should be noted that over in the art department just about everybody has regretfully abandoned PM4 and gone back to PM3 whenever they don't need a particular feature of the newer version, because it's slow even on the fx and ci.) To be sure, thousands of people are happily producing newsletters on Pluses, and these people would not be disappointed with the LC's performance, but the machine should not be confused with a high-end workstation.

Similarly, if you're running MandelZot to get some cool fractals for your graphics program, start it running and go to lunch, because it will take at least an hour for the screen to draw. However, once you've saved the screen as PICT or TIFF, it will open up quickly in your graphics application.

Though we didn't really tax it by attempting to work with 15MB files, the notoriously resource-hungry Adobe Photoshop performed surprisingly well. In a 2.5MB TIFF file, for example, the program balked at using the paint bucket on large areas because 7+ MB of disk space was inadequate, but we've had the same problem on the fx and the ci. Photoshop wants lots of disk, period, so if it's going to be a component of your system, you might find the LC's 40MB disk inadequate. But once you've dealt with the disk problem, the demanding program runs fine—slowly compared to what it does on an fx, but acceptably.

We tried a large (1.8MB) FileMaker Pro database on the LC and were quite pleased at the speed with which it sorted and found records. Similarly, the machine works quite well for word processing.

WHO SHOULD BUY THIS?

For the first-time Mac buyer with generic requirements (word processing, spreadsheets, moderate database work, online access, not to mention a few games), the LC is an excellent choice. For people who use Macs at work and are looking for an affordable machine for their homes, the LC is also ideal.

Serious power users and graphics professionals may find the machine underpowered for their needs and should probably look at the si, ci, or fx Macs instead. (Macintosh LC, 2MB RAM, 40MB hard disk, $2,499; 12" RGB display $599) ■

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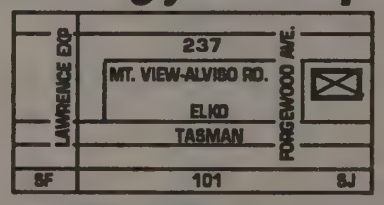

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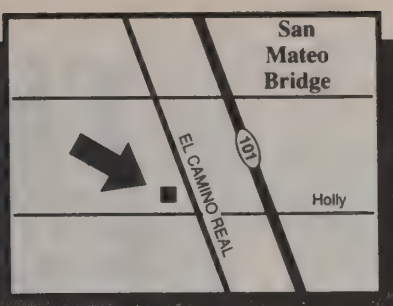

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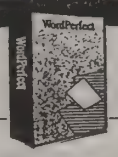

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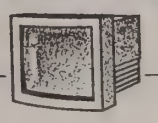

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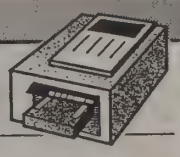

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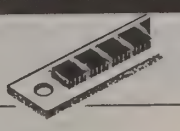

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The Personal LaserWriter LS

Quality Printing You Can Afford

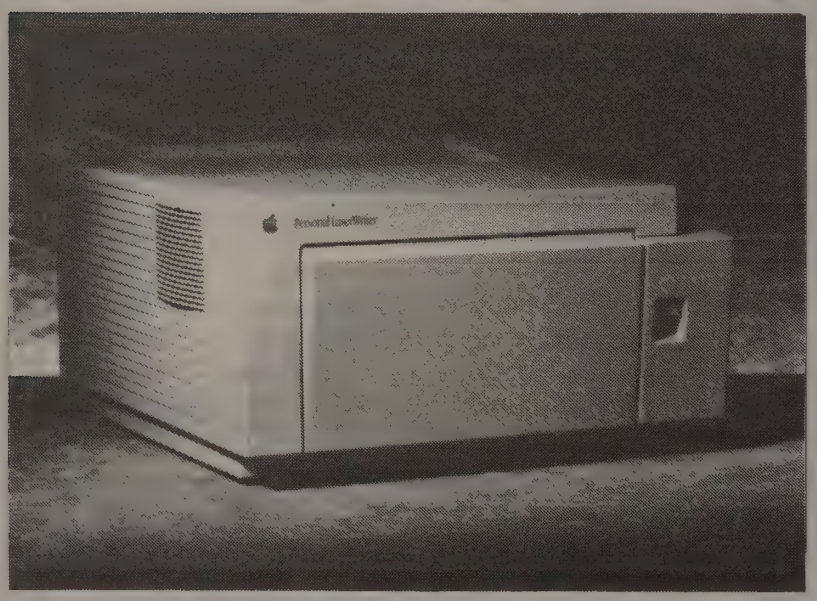
BY MICHAEL ROBIN

Between the introduction of three less expensive Macs (the Classic, LC, and IIsi) and the long anticipated release of System 7, Apple brought us an affordable new printer—the Personal LaserWriter LS. The LS brings high-quality printing to users of these new machines, as well as older Mac users in a wide range of work environments.

In addition to its reputation for being high-priced, Apple LaserWriters have been known for high quality. This quality is reflected both in the output, or printed page, and craftsmanship. In many ways an Apple LaserWriter is like your old slant-6 Plymouth Valiant. Its easy to drive and it runs forever. The same is true for these printers. For instance, I cannot remember seeing a paper jam on an Apple LaserWriter, nor having one break down. Everything about the LS says that it continues in tradition.

PLUG-AND-PLAY

The first thing you will notice about this printer is that the Personal LaserWriter LS is compact, easily fitting on any desktop. Getting the printer up and running is simple and easy. It comes with two cables: one for power and one to attach the printer to the computer. After attaching the cables, you slide the self-contained toner cartridge into the printer, and the printer is ready.



The LS plugs into the printer port on any Mac Plus or later. It requires System 6.0.7, at least 1MB RAM, and a hard disk. (For Mac owners that do not have SuperDrive Apple dealers have the 800K four-disk set of System 6.0.7.) Three disks come with the LS. The first two install the LS and a new version of laser prep. The third disk includes the necessary TrueType files. After a simple installation, you're ready to go.

Built around the Canon LX print engine, the same as the LaserWriter NT, the LS prints at 300 dpi with a maximum speed of 4 ppm. The Canon is a tried and tested engine. The printer's built-in, multipurpose paper tray handles letter and legal size paper, as well as envelopes, labels, and transparencies. A short paper path and additional "Face-up Delivery" tray help to avoid paper jams and curling with labels and transparencies.

This new printer represents more than Apple's efforts of bringing the benefits of the Mac to a greater audience by making a high-quality system more affordable. With the Personal LaserWriter LS and the StyleWriter, Apple has also introduced TrueType fonts and utilities.

The LS uses TrueType for fonts and QuickDraw descriptions for all other elements on a page. Users who do extensive page layout, working with scanned images and applications such as PixelPaint and Photoshop, will want to use higher-end printers, such as the IINTX. But for most of us QuickDraw easily handles a wide range of images, including screen captures and accurate high-quality proofs of page layout applications.

If your reaction to TrueType was anything like mine, you may be confused by fonts. The important thing to know is that TrueType is an alternative to PostScript, not a replacement. Several font vendors have already announced plans to support TrueType, along with their existing PostScript font libraries. Adobe Type Manager (ATM) creates smooth, crisp Adobe fonts on TrueType printers when you don't have the TrueType font. Also, type format conversions, such as FontMonger from Ares Software, will help minimize potential problems with using different fonts. Fonts made by different vendors, such as versions of Palatino by Adobe, Casady & Greene, or TrueType are all a little different. In page layout applications where size and spacing make a difference, you need to check that everything matches when you go to print.

PERFORMANCE

Since the Personal LaserWriter LS connects directly to your Mac, its speed is dependent upon how fast your Mac works. Designed for less expensive Macs, I connected the LS to a Classic with 2MB RAM. To achieve optimal printing speed, your Mac should be running under plain Finder. In this fashion, the LS prints almost as fast as other LaserWriters—Apple and non-Apple printers.

My frustrations began when I was working under MultiFinder. I do almost all of my work using MultiFinder, often with two applications open. When printing in these conditions the LS printed significantly slower, and the Classic also worked slower.

During the day when I print a document, I move on to other work while the printer works in the background. This was not a serious problem with the LS, if I could wait for the printer to do its work. If I was in a hurry, I would need to turn off MultiFinder, restart, and then print the document. I expect the LS will work faster when I upgrade the memory. But I am curious what will happen running under System 7 when I don't have the option to turn off MultiFinder.

WHO SHOULD BUY THIS PRINTER?

Anyone who is using a LaserWriter IINT or IINTX at a quick print store or in their office has become spoiled using higher-end printers. But it is also frustrating wating in line to print the summary of a report others are waiting to review. The LS lets you easily print high-quality documents in the office or at home.

While the Personal LaserWriter LS is slower than these other models, it is not designed for networks or extensive, high-end graphics. However, a Personal LaserWriter LS makes laser printing affordable for more people. (A Classic with an LS is less expensive than my three-year-old SE at home, without a printer.) Clearly, the LS offers high-quality printing, in a machine that will be as dependable as your old Valiant. (Suggested retail price, $1,299) ■

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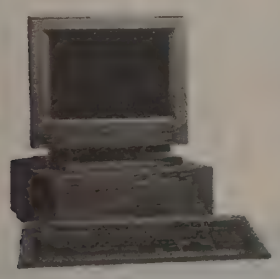

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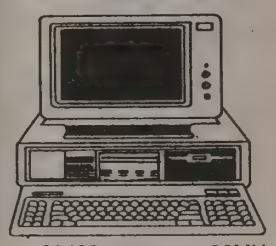
64K Cache & 1MB RAM

SUPER FAST!

NEW ARRIVAL



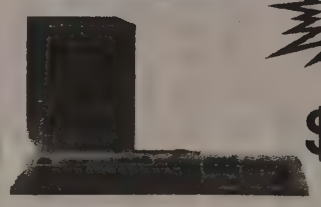
$2099

• 80486 processor, 33MHz • 1MB RAM expandable to 16MB• 64K Cache • 5.25", 1.2MB FDD • IDE-Hard/Floppy controller• 101 enhanced keyboard • Serial/Parallel ports • AWARD BIOS • INTEL chip sets • 1-year warranty

ACCESS 486-25MHz
64K Cache & 1MB RAM

SUPER FAST!

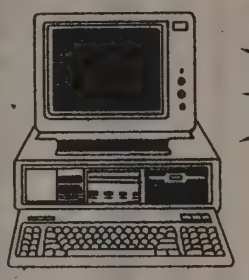
Super LOW Price!



$1899

• 80486 processor, 25MHz • 1MB RAM expandable to 16MB • 64K Cache • 5.25", 1.2MB FDD • IDE-Hard/Floppy controller• 101 enhanced keyboard • Serial/Parallel ports • OPTIONAL tower case• Socket for WEITEK mathe co-processor • 1-year warranty

ACCESS 386-33MHz
64K CACHE



SUPER LOW PRICE!

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• 1MB memory • 1.2, 5.25" FDD • 1-1 interleave controller • 101 key keyboard

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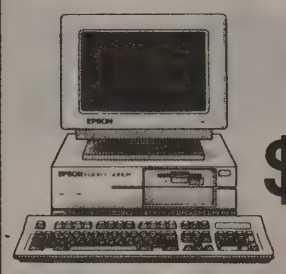
EQUITY 386SX-16MHz

ONE YEAR WARRANTY!



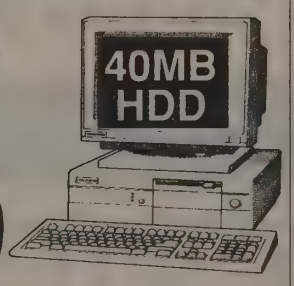
$777

• 80386SX-16MHz • 1MB RAM exp to 14MB • 1.44MB 3.5" FDD •MS-DOS 4.01• Serial, parallel & mouse ports • 5 expansion slots • EPSON's 1 year warranty.

HYUNDAI
SUPER 386SX-16MHz
FULLY LOADED VGA SYSTEM

18-MONTH WARRANTY!

40MB HDD

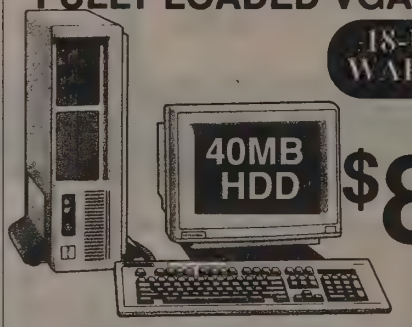


$1199

• 80386SX-16MHz • "0" wait state • 1MB RAM exp to 8MB • 5.25", 1.2MB FDD • MS-DOS 4.01• Serial & parallel ports • 6 expansion slots • 101 key keyboard • Maxtor 7040 40MB HDD • ST 441 Monitor & Everex EV 628 VGA Card • 18-month warranty

HYUNDAI
Super 286-10MHz
FULLY LOADED VGA SYSTEM

18-MONTH WARRANTY!



$888

• 1MB RAM memory • 80286CPU,10MHz • MS-DOS 3.2, GW-BASIC • 12 Expansion Slots • 240 watt power supply • 101 key keyboard • 1.2MB, 5.25" FDD • Seagate ST251-1 40MB HDD • ST 441 VGA Monitor & Everex EV 628 Card • 18-month warranty

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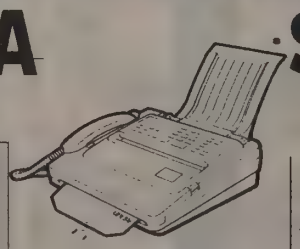


4700

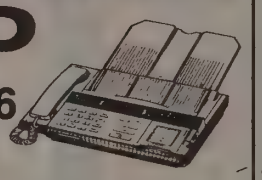
$699

• 10 sheet automatic feeder
• 164' paper capacity
• 256K memory
• 16 grey scale
• Built-in telephone

TOSHIBA TF251 ..... $789
TOSHIBA 4400 ..... $499
TOSHIBA4600 ..... $629

SHARP

FO-216



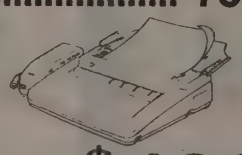
$589

• Auto cutter
• Auto fax/phone switch
• Answering machine hook-up

SHARP FO-120 ..... $449
SHARP F0-240 ..... $699
SHARP F0-334 ..... $789

MURATA

M1100

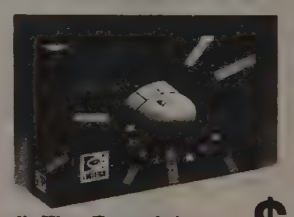


•Automatic Paper Cutter
•Advanced calling features
•Automatic multi-page feeder
•Secondary phone connection

$429

LOGITECH

MOUSEMAN™



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• Cordless, Radio Wave Transmission
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• PLUS 3-button funtionality
• 400 dpi resolution
• MouseWare™ Utilities software
• Guaranteed to work w/ all your application software

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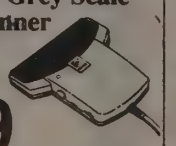
Model 256 Grey Scale Scanner



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• 100- 400 dpi adjustableres
• Ansel Image Editing & SoftMate software
• 256 grey scale

MOUSEMAN™
HIGH RESOLUTION
ERGONOMIC MOUSE

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• Maximum comfort & ease of use
• Microsoft compatibility PLUS 3-button functionality
• 400 dpi resolution
• MouseWare™ Utilities software

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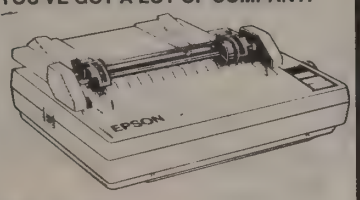

LX-810

• 190cps, 30cps NLQ • 80 column printer
• SelecType front control panel
• EPSON's 1 year limited warranty

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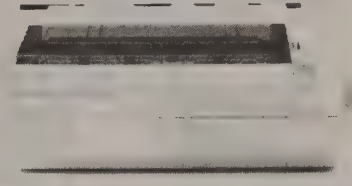

LQ-510

• 180cps, 60cps LQ • 24-pin printer
• Built-in Roman and SansSerif fonts
• 360x360 dpi resolution

$249

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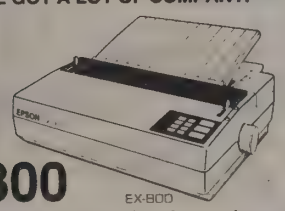

EX-800

• 300cps, 54cps NLQ • Auto sheet load• SelecType II front control panel
• EPSON's 1 year limited warranty

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FX-850 80-COLUMN! **$299**

FX-1050 136-COLUMN! **$399**

• 264characters per second
• 240x216 dpi resolution • 9-pin printer • 1 year warranty

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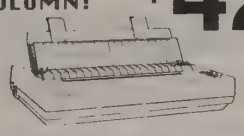
LQ-850 80-COLUMN! **$429**



LQ-1050 136-COLUMN! **$599**

• 264characters per second
• Built-in push tractor feed • 24-pin printer •1 year warranty

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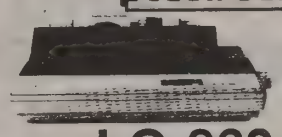
COLOR VERSION!



LQ-860

• 300characters per second
• Built-in push tractor feed • 24-pin printer COLOR •1 year warranty

$599

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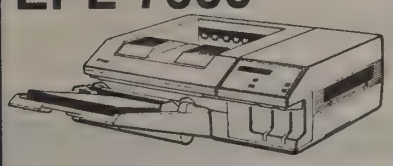
EPL-7000



• 300x300 dpi resolution • 6 PPM
•14 resident fonts • Expandable to 6MB • EPSON's 2 year limited warranty

$899

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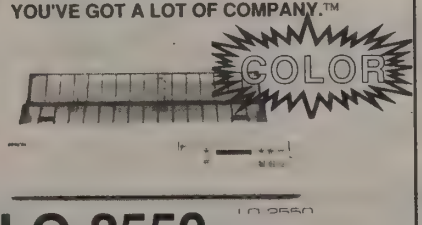

LQ-2550

• 400 characters per second
• 360x360 dpi resolution • 24-pin printer• 7 resident fonts • 1 year warranty

$899

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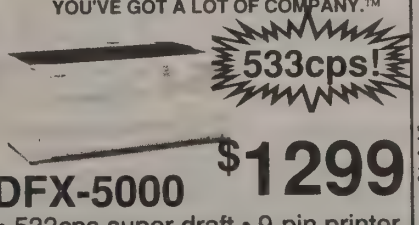

DFX-5000 **$1299**

• 533cps super draft • 9-pin printer
• Dual push tractor system
• Handles 6-part carbonless form

DFX-8000 1066cps!

DOUBLE THE SPEED OF THE DFX-5000! **$2299**

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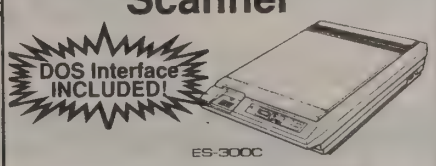
ES-300C COLOR Scanner



• 50-600 adj. resoultion
• 16 million colors, 256 level of grey
• Mac interface available

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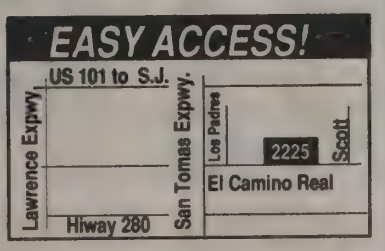

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Panasonic Office Automation

KX-P4455
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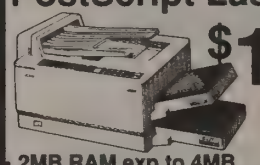
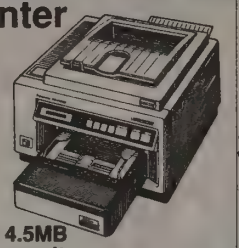


$1989

- 2MB RAM exp to 4MB
- 500 sheet paper capacity
- 26 internal fonts • 11PPM

KX-P4450i $1199

KX-P4420
Laser Printer



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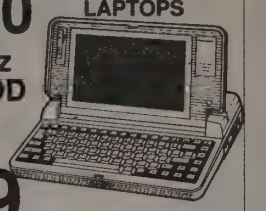
- 512K RAM exp to 4.5MB
- 250 sheet paper capacity
- 300 dpi resolution • 8 PPM

CF-270
NOTEBOOK SIZE LAPTOPS

286-16MHz w/20MB HDD



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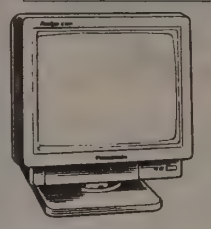
- 1M exp to 5MB • Backlit supertwist LCD
- 1.44MB, 3.5" FDD • MS-DOS 4.01
- Rechargeable batter pack
- Weights 7lbs w/battery

SUPER VGA MONITOR .28 DOT PITCH INTERLACED

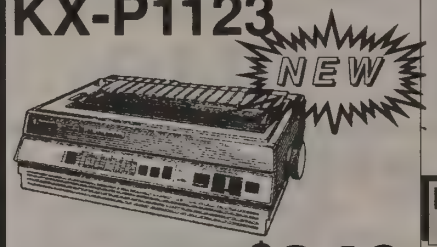


C1381

$379

- Super VGA Monitor
- .28mm dot pitch
- 1024x768 resolution

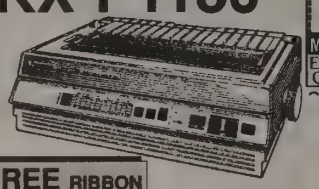
KX-P1123



- 192cps, 63cps LQ
- 5 built-in LQ fonts
- 2 year warranty

$249

KX-P1180
PC MAGAZINE EDITORS' CHOICE



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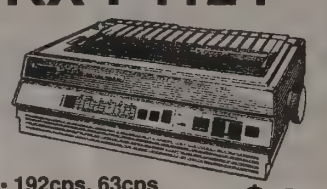
- 192cps, 38cps NLQ
- 240x216 dpi resolution
- 80 column printer

$159

KX-P1124
PC MAGAZINE EDITORS' CHOICE

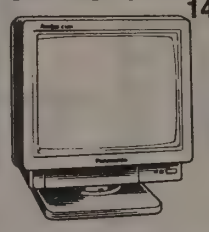


- 192cps, 63cps
- 5 built-in LQ fonts
- 2 year warranty

$249

KX-P1524 ..... $329

C1391



14" Multi-Frequency Color Monitor w/STB
1MB VGA card
256 Colors at 1024

- .31mm dot pitch
- 1024x768 resolution

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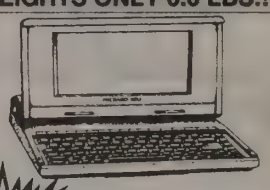

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- 1MB RAM exp to 8MB • Standard 79/80 keys w/12 function keys20MB HDD & 3.5"1.44 FDD
- Serial & Parallel ports• MS-DOS 4.01 included
- Weights 6.6 lbs.

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B310 SuperSlim

286-10MHz w/ 40MB HDD
Notebook Size Laptop

SLEEK DESIGN!

Backlit LCD $1299

ReflectiveLCD 999

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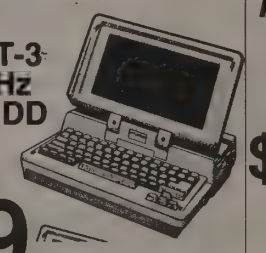
- 3.5", 1.44MB FDD • MS-DOS 3.3 w/GW-BASIC
- Rechargeable & Removable battery pack

HYUNDAI

18-month warranty

SUPER LT-3
286-10MHz
w/20MB HDD

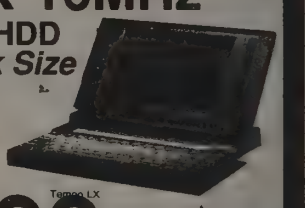


$999

- 1MB exp to 2MB • 3.5", 1.44MB FDD
- Supertwist backlit LCD screen
- Serial/parallel ports • MS-DOS 3.3

TEMPO LX

386SX-16MHz
w/ 20MB HDD
Notebook Size Laptop



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- Parallel & serial ports
- Weights 7lbs w/battery

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RX7100 Laser Printer

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RX7100PS *POSTSCRIPT* Laser Printer

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- 640K RAM • 5 pages per minute
- Single paper bin
- HP emulation • 1 year warranty

GREAT DEAL!

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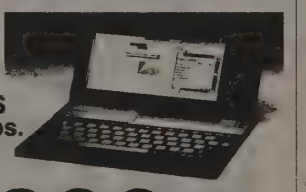

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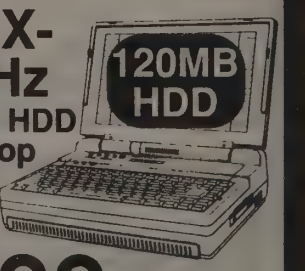
- 80C286, 12 MHz w/ 20MB HDD
- 1MB RAM exp. to 3MB
- VGA resolution 640x480
- MS-DOS 4.01 & Laplink included

EXCELL

386SX-16MHz
w/ 120MB HDD
Laptop

120MB HDD



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- INTEL 80386SX-16MHz • Conner HDD
- 1.44MB, 3.5" FDD • 1MB exp to 4MB
- LCD w/ backlit screen

40MB HDD Version $1999

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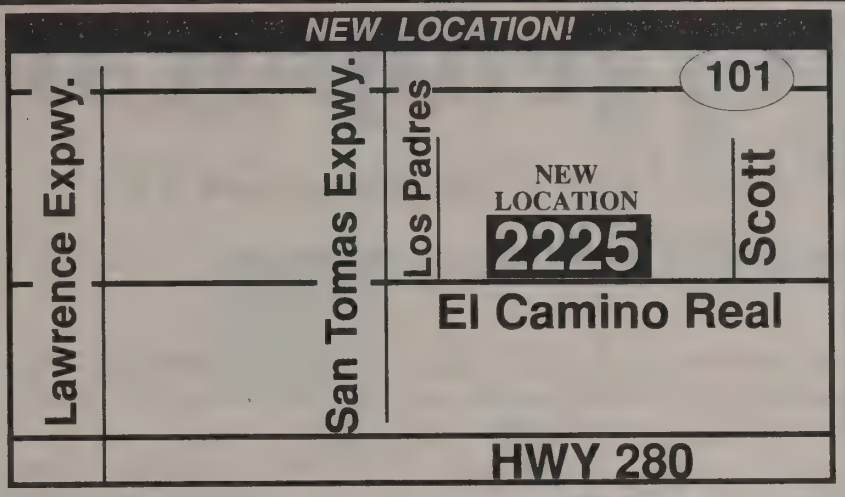

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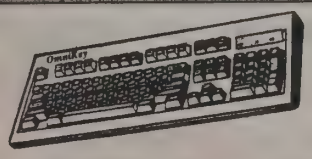

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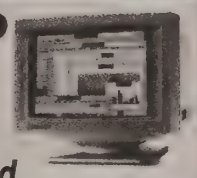

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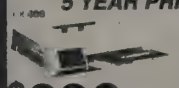

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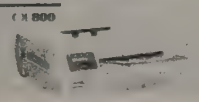

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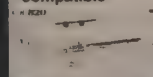

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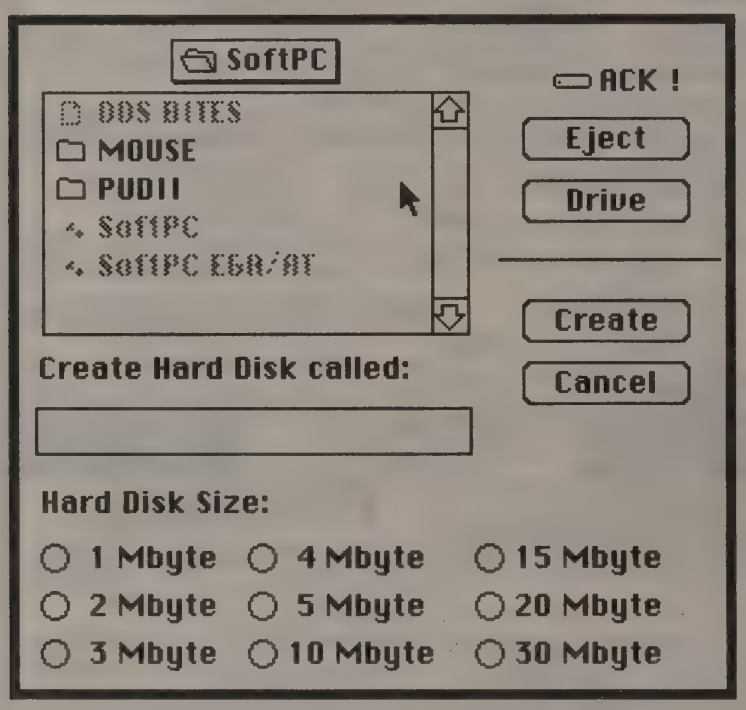
Turn Your Mac Into A PC, Temporarily

SoftPC Lets You Run Your DOS Programs On A Macintosh

BY TIM WONG

One of the most common arguments against buying a Macintosh is that it can't run "industry standard" DOS-based software packages. With Insignia Solution's SoftPC, a DOS emulator software package, a Macintosh can now run DOS software applications.

Insignia currently has three versions of SoftPC for the Macintosh: SoftPC for the Macintosh Classic and the LC (CGA/AT), SoftPC for the SE/30 and Macintosh II family (CGA/XT), and an EGA/AT add-on package for the SE/30 and Macintosh II family. SoftPC EGA/AT, which is the topic of this article, requires at least 3MB RAM and 7MB of hard disk space to emulate an Intel 80286 640K IBM AT. SoftPC EGA/AT can be set up to use 4MB RAM, on top of the standard 640K, for those DOS applications that support LIM (Lotus-Intel-Microsoft) expanded memory. The main drawback with using 4MB of expanded memory is that SoftPC will use 7MB of the Macintosh's RAM.



The user can create "soft hard drives" that are treated as SoftPC documents on the Macintosh.

SoftPC EGA/AT boots faster than a real IBM PC AT, since it does not have to warm up, and it even plays the digitized "whirl sound" of 5.25" disk drives being accessed by the "PC" as it loads.

SoftPC comes with SlavePC, a DOS program that allows SoftPC to access Drive A on a PC. To use SlavePC, the Macintosh and PC must be connected by null modem cable, like those supplied by DataViz with its MacLinkPlus PC product. Insignia supplies the cable pinouts for those who do not want to make the additional software investment. SoftPC's documentation warns that SlavePC is slow and is not recommended for everyday use. SlavePC is incredibly slow; a 200K transfer from Drive A from an AT&T 6300 to a Macintosh took almost fifteen minutes. SoftPC cannot directly format DOS floppies with an Apple SuperDrive. You have three options to format a 3.5" floppy as a DOS disk in a Macintosh: Apple File Exchange, Dayna's DOS Mounter 2.0, or Insignia's AccessPC.

Apple File Exchange is a standalone application. Both DOS Mounter and AccessPC are CDEVs (control devices), which are programs resident in RAM until they are activated by the user.

Drives C and D are DOS hard drives within SoftPC. A user can create these drives from a dialog box in the SoftPC application. Like in the DOS world, one has to format these "soft hard drives" as if they were physical hard drives connected to a PC. This will not affect your Macintosh hard drive, these soft hard drives are treated as SoftPC documents in the Macintosh environment. Files written to these hard drives are not directly accessible in the Macintosh environment. Insignia's AccessPC gives users direct access to files stored in SoftPC hard drive documents while you are in the Macintosh environment.

Drive E is SoftPC's direct link to the Macintosh environment. This is the Macintosh directory—in Macintosh terminology, a folder—that a user defines as Drive E. Files written to Drive E, are accessible in the Macintosh environment and some files can be read directly into Macintosh applications. Thus a LOTUS 1-2-3 spreadsheet can be saved from within LOTUS 1-2-3 to Drive E, and this spreadsheet can be directly loaded into MS-Excel (Macintosh) without conversion. Other DOS file formats may have to be translated into a readable Macintosh document before going to the Macintosh environment.

The applications used in SoftPC for this review included LOTUS 1-2-3 v2.1, Clarion Personal Developer, dBASE III plus, dBASE IV 1.1, Paradox, Norton Utilities, Norton Commander, Q-EDIT, Telix, Turbo Pascal, PKZIP, a few TSRs, and a large number of shareware

Continued on page 140

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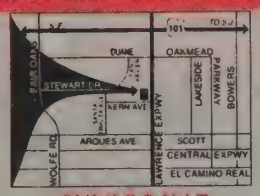

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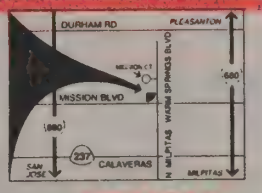

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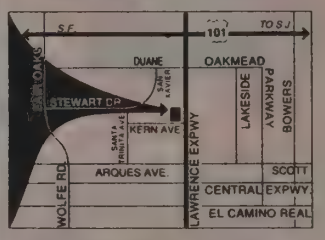

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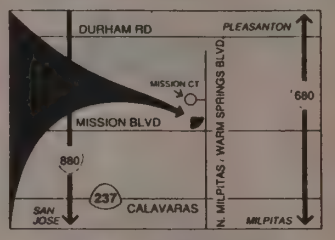

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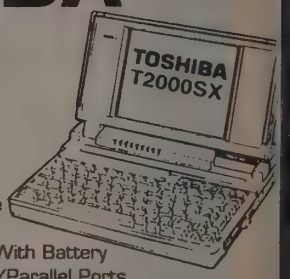

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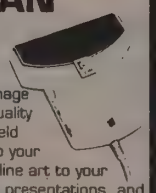

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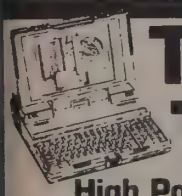

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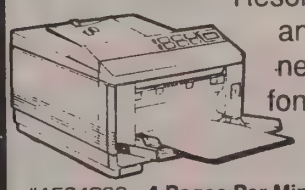

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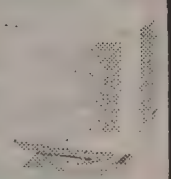

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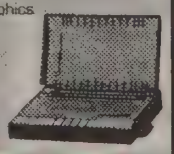

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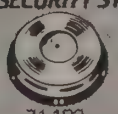

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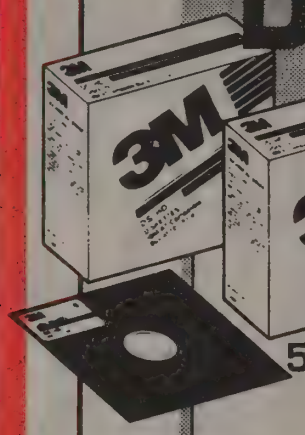

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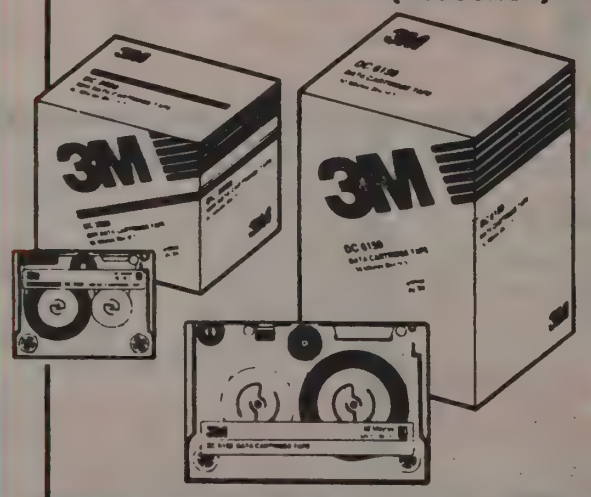

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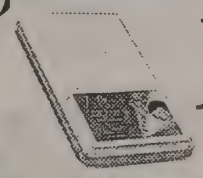

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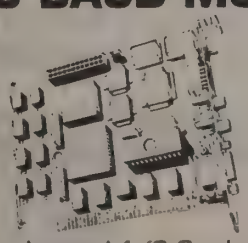

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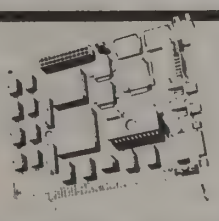

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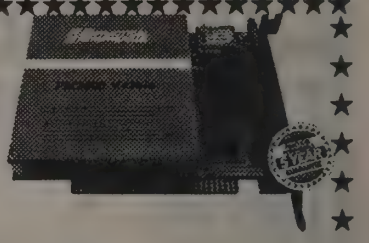

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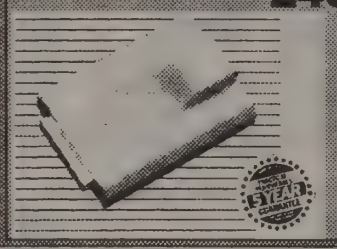

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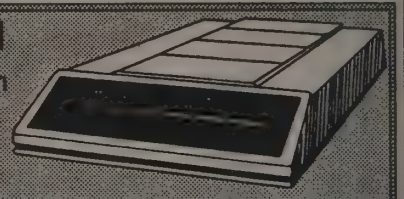

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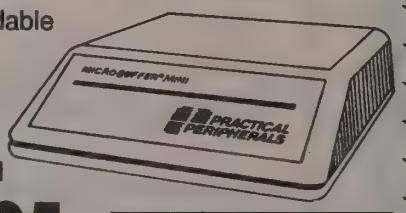

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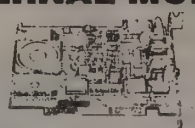

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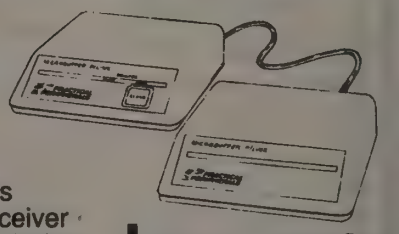

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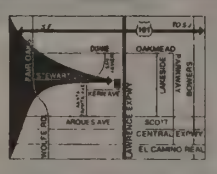

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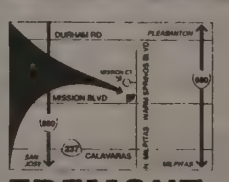

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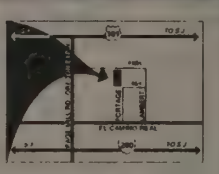

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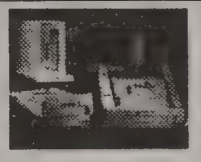

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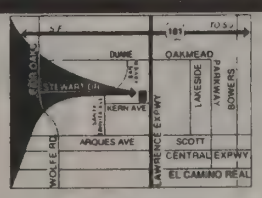

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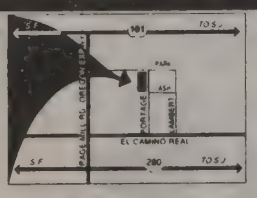

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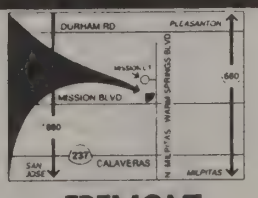

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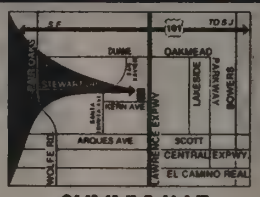

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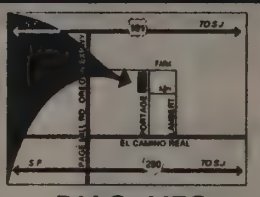

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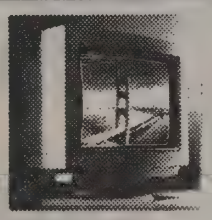

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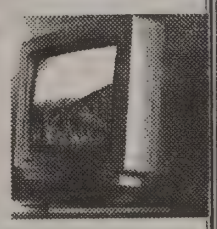

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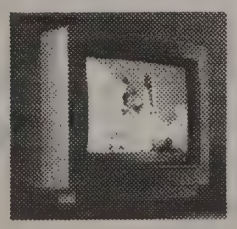

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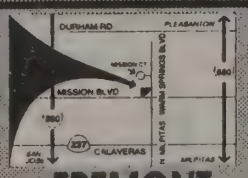

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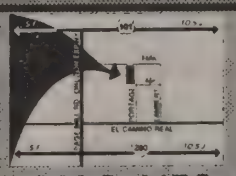

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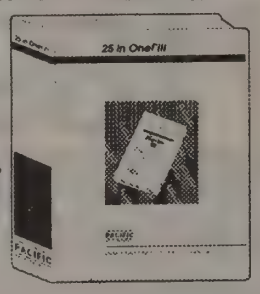

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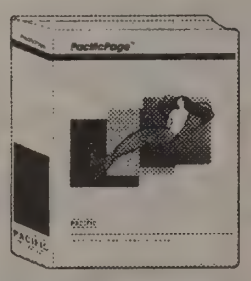

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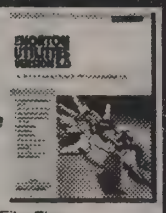

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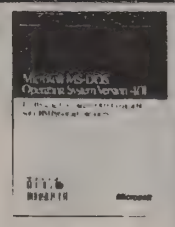

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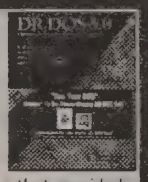

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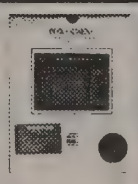

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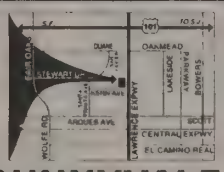

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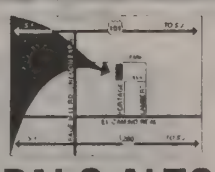

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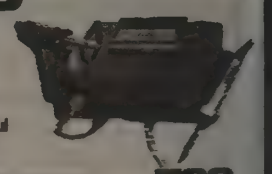

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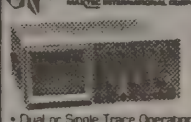

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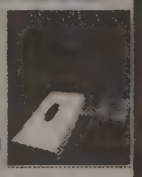

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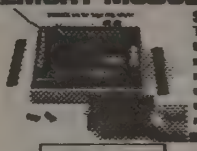

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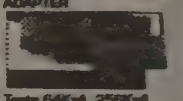

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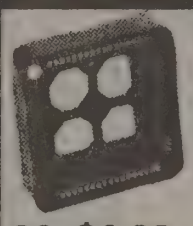

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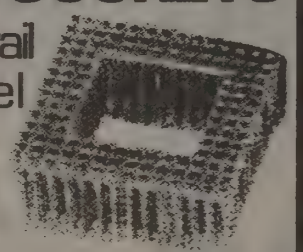

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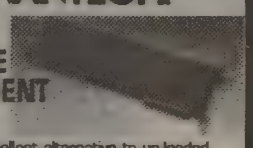

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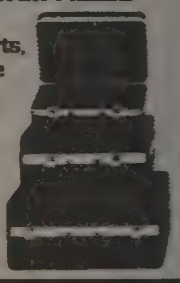

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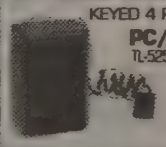

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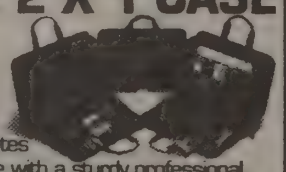

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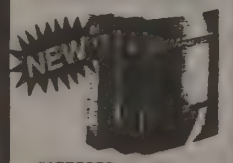

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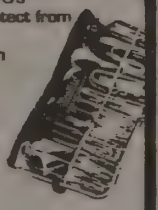

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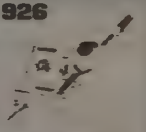

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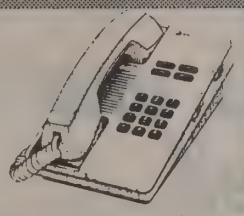
MODEL 700



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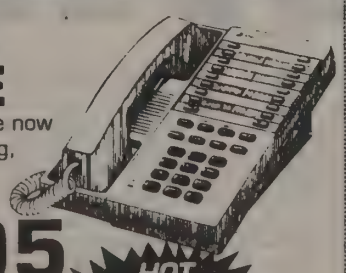
MODEL 712



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From the Number One maker of telephone products comes this hot new answering machine. It has beeperless remote control, voice activation, ring select and much more!

MODEL 1306
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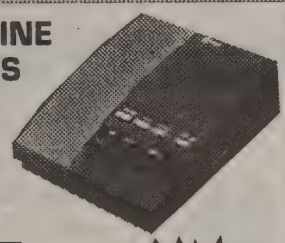

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NEW!

AT&T **TIME RECORD ANSWERING MACHINE**

Now you don't have to wonder when they called! This outstanding answering machine will record the time and day after each call!
The beeperless remote works with both rotary and touchtone phones!

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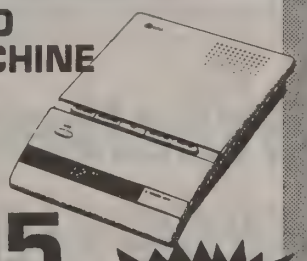
#1516199



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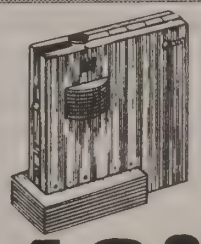
RECORDS TIME AND DATE

AT&T **DIGITAL ANSWERING MACHINE**

Now you can join the digital revolution with AT&T's totally digital answering machine! This hot new unit has no moving parts! It has a digital message counter, beeperless remote, and super digital sound quality!

MODEL 1337
#1569429



SUPER DIGITAL SOUND

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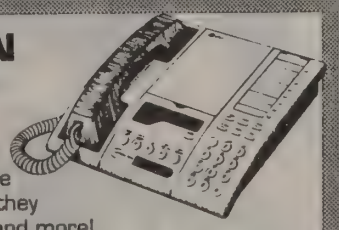
MODEL 1523



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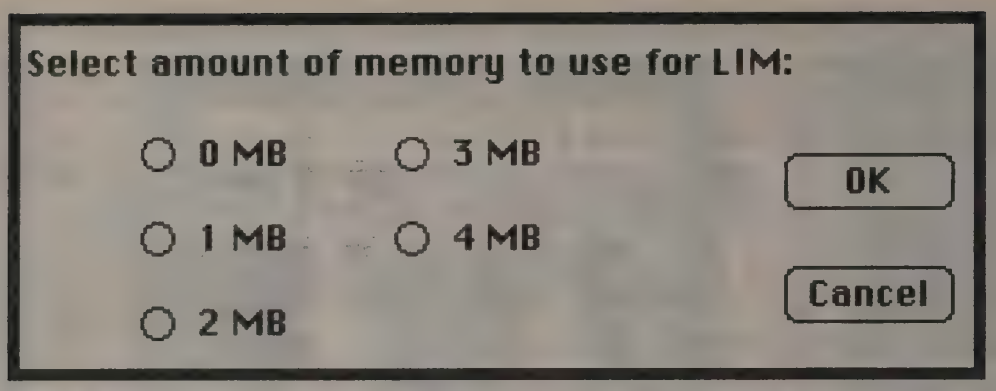
VOICE TIME/DATE STAMP



When SoftPC EGA/AT is set for 4MB RAM, it will use 7MB of your Mac's RAM.

Continued from page 126

utility programs.

Lotus 1-2-3 ran with no trouble and it appears to run as fast on SoftPC as it does on an AT. Norton Utilities will recover erased files from the "PC hard disk" with a high probability of success. Please note that not all DOS applications will run on SoftPC, and the safest route is to use established applications such as LOTUS 1-2-3, dBASE, Q-EDIT, etc. But this is the same with most PC clones.

The Norton Utilities speed index for SoftPC EGA/AT running off a SE/30 with 5MB RAM, was 3.1. This is slow compared to 386-based machines that sometimes get an overall Norton rating of 33 or more. One of the first questions people usually ask about SoftPC is, "Does it run DOS games?" SoftPC actually does run DOS games, but they run very slowly. This is also true for business applications like Clarion and Borland's Paradox. SoftPC can run Windows 3.0, but it to will run very slowly. Emulated CPU speed is relative to the type of Macintosh you own: A Macintosh IIfx will run SoftPC a lot faster than a Macintosh Classic.

Printing can be a problem with SoftPC. The printing process within SoftPC has two steps. Step one is to issue the print command from within the DOS application. The data is written to RAM. A user then must issue a second print command from within the SoftPC pull-down menu. The data in RAM is then sent to the Macintosh printer. Epson and Postscript printer emulations are supported. The key to printing documents with SoftPC is patience; one has to wait for SoftPC to print the entire document to memory before selecting the print command from the SoftPC menu bar. If not, pages upon pages of scrambled information will be printed. The best solution is to make a copy of a DOS applications' document to Drive E and convert it to a Macintosh file format via a PC-to-Macintosh file conversion package. Then print the converted document from a Macintosh application.

If you need to occasionally run DOS software and you own only a Macintosh, SoftPC may be for you. It is an ideal product for new Macintosh owners with a large investment, in both time and money, with DOS applications. SoftPC is also an excellent tool for Macintosh users who want to run DOS applications. I currently use SoftPC to run Paradox and Clarion, two relational database managers that do not have Macintosh counterparts. But if you use the common types of Macintosh programs—like word processors, spreadsheets, and telecommunications packages— and you need to occasionally use DOS files you should consider using file conversion products. Why run Lotus 1-2-3 and dBASE III plus on a Macintosh when you can use their Macintosh counterparts, Microsoft Excel and FoxBase+/Mac, which are faster and far easier to use? (Insignia Solutions, Inc., 526 Clyde Ave., Mountain View, CA 94043. 415/694-7600) ■

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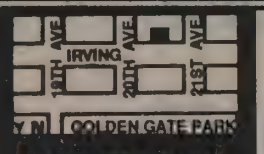

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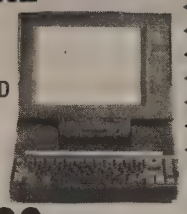

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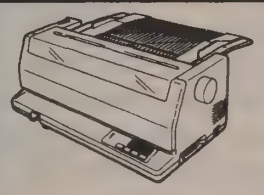

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Plenary Speaker: Jerry Pournelle, Ph.D., Author and Columnist

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DTP-1 Basics of Design and Fonts (Chair: Gail Koffman, Design Editor, *Publish*)
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DTP-3 Producing Promotional Material and Ads (Chair: Jake Widman, Senior Technical Editor, *Publish*)
DTP-4 Color Update for Small Business: A Cornucopia of Changes for 1991 (Chair: Pamela Pfiffner, Print Publishing Editor, *Publish*)
DTP-5 After You've Laid It Out, Then What? (Chair: Steve Muller, Senior Designer Associate, *Publish*)

THE IMPORTANCE OF COMPUTERS IN EDUCATION
Track Chairs: Rita Zokaei, President, Computer Literacy Foundation, and Roberta Pournelle, Learning Specialist, L.A. County School System
EDU-1 Enhancing Learning with Computers (Chair: Rita Zokaei)
EDU-2 Finding Computer Money for Your School (Chair: Roberta Pournelle)
EDU-3 Innovative Computer Education Programs: What Works and What Doesn't Work (Chair: Rita Zokaei)
EDU-4 How to Prepare Your Children for the 21st Century and the Role of Technology (Chair: Roberta Pournelle)

COMPUTER ENTREPRENEURING
Track Chair: Ed Niehaus, President, Niehaus Public Relations
ETR-1 How to be a Software Entrepreneur: From Garage to Riches (Chair: Ed Niehaus)
ETR-2 International Opportunities (Chair: Andrew Olson, Managing Director, Team International)
ETR-3 Identifying Opportunities: Twenty Ways to Make Money with Your Computer

FINDING THE RIGHT COMPUTER FOR YOUR BUSINESS
Track Chair: Mark Brownstein, L.A. Bureau Chief, InfoWorld
FIN-1 The Benefits of Computerizing Your Business (Chair: Mark Brownstein)
FIN-2 Tips for Buying Hardware and Software (Chair: Russ Walter, Publisher, *The Secret Guide to Computers*)
FIN-3 PC vs. Mac
FIN-4 Workstations and Other High-End Computers (Chair: John Barry, Editor-in-Chief, *SunWorld* magazine)

GETTING THE MOST OUT OF WHAT YOU ALREADY HAVE
Track Chair: Dr. Norman Schneidewind, CDP, Computer Scientist, Computer Research
GET-1 How to Achieve Performance Improvements in PC LANs
GET-2 Performing a PC/Mac Tune-Up
GET-3 Virus Protection (Chair: John McAfee, President, McAfee Associates)
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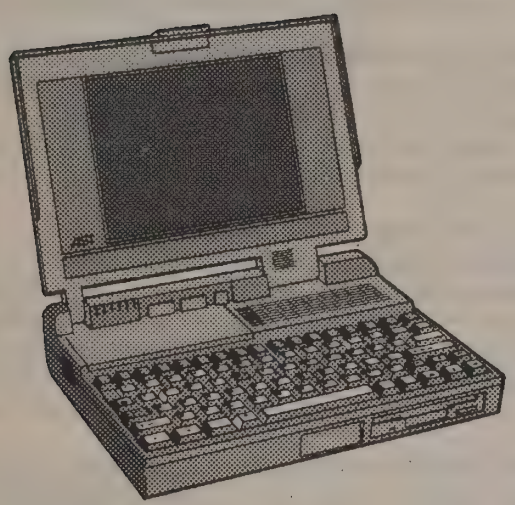

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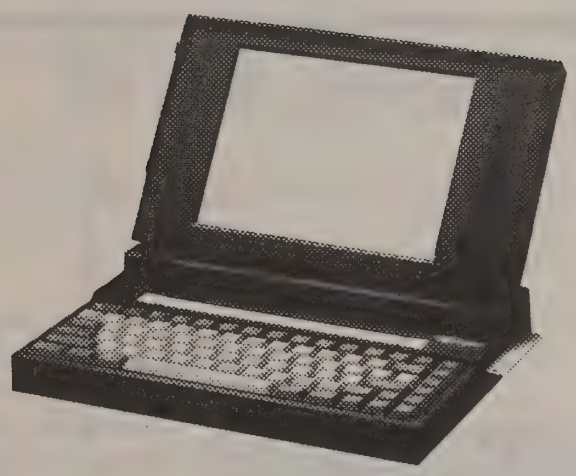

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HOM-2 Setting Up a Home Office: Financial Implications and Other Considerations (Chair: Larry Magid)
HOM-3 Home Office: Some Problems and Solutions (Chair: Bernie DeKoven, Director, Better Meetings)

COMPUTERS AND SOCIETY: LEARNING TO LIVE TOGETHER
Track Chair: Steve Rosenthal, Contributing Editor, *MacWeek* and Prodigy
LRN-1 The VDT Controversy: What It Means to Silicon Valley and Computer Users (Chair: Steve Rosenthal)
LRN-2 Transcending Disabilities with Computers (Chair: Jacquelyn Brand, Executive Director, Alliance for Technology Access)
LRN-3 Hackers, Crackers, Freedom and Privacy (Chair: Jim Warren, Columnist, *MicroTimes*)

THE MAC TRACK
Track Chair: Jan Lewis, Editor in Chief, Hesse Video Communications,
MAC-1 Profiles in Mac Usage (Chair: Jo Ann Mandinach, President, Need to Know)

THURSDAY, MAY 30

10:30 am
Keynote Address: Small Business and Home Office Computing
Therese Myers
President and Founder
Quarterdeck Office Systems
"The West Coast Computer Faire made us," says Myers, who recalls the 1985 Faire as a key factor in DESQview's successful launch and subsequent acceptance. "The people who walked into that show were the individual users. They were independent thinkers. They were people who had needs and listened to our story and bought the product. Bought enough so we were launched.

"What became clear over the years is that those users that are participants in the West Coast Computer Faire, those individual people who are the computer gurus, the ones that are the computer activists, those are the ones that are setting the stage for acceptance of new ideas and trends."

"I think these people are sophisticated. I think these people have been in the computer industry since it started, and I think they've progressed. They've progressed with us through the memory boards to the 386es. They've experimented with the Borland languages. They're the ones that are doing all the object-oriented development tools. Yes, they're at home, but they are certainly PC aware within the job. That person's the one that's picking the ideas as to where to go, experimenting with the different connections, running the bulletin boards—the one that's putting together two and three different products and making them do things and building the solutions. He has a computer, he buys a clone, he buys the cheaper software, he takes advantage of the tools and is doing great, great things."

In her keynote address, Myers will discuss some of the innovative tools and solutions generated by individual users intent on getting the most productivity from their computer tools, and look at promising future directions.

FRIDAY, MAY 31

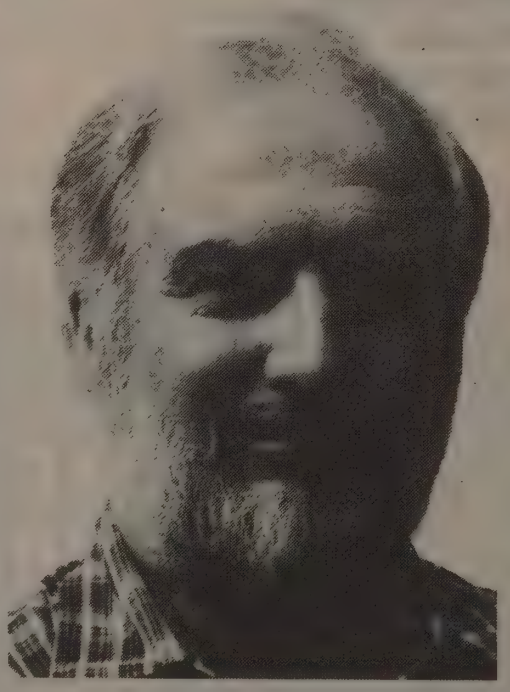
12:30 pm
Creating Effective Multimedia Presentations
Jan Lewis
Editor-in-chief, Hesse Video Communications
Lewis chairs a session designed to show you how to make multimedia an effective tool for delivering your message.

MAC-2 Mac in a "DOS" Company: Can the Two Co-Exist? (Chair: Andrew Olson, Managing Director, Team International)
MAC-3 Unique Mac Applications (Chair: Jan Lewis)

PERSONAL COMPUTER MUSIC PRODUCTION
Track Chair: Eric Peterson, Director, Music Technology, Cogswell College
MSC-1 Making Music at Home with a PC (Chair: Eric Peterson)
MSC-2 Putting Music to Your Home Video (Chair: Eric Peterson)

THE MULTI POSSIBILITIES OF MULTIMEDIA
Track Chairs: Jan Lewis and Steve Rosenthal
MUL-1 How to Get Started with Multimedia (Chair: Tony Bove, Editor, *Bove & Rhodes Inside Report on Desktop Publishing*)
MUL-2 Getting Images from Computer to Video and Back (Chair: Steve Rosenthal)
MUL-3 Creating Effective Multimedia Presentations (Chair: Jan Lewis)
MUL-4 Multimedia in Training and Education (Chair: Dr. Dennis Collins, Business Editor, *California Computer News*)

PORTABLE COMPUTING
Track Chair: Gene Talsky, President, ProMark
POR-1 Choosing a Laptop: Alternatives Increase in Numbers, but Not in Functionality (Chair: Steve Hess, Executive Vice President, Creative Strategies, Santa Clara)
POR-2 Portable Connectivity: Can You Get from There to Here, and Back Again (Chair: Andrew Seybold, Associate Director, Microcomputer Systems Service, Dataquest)



SATURDAY, JUNE 1

3:30 pm
Hackers, Crackers, Freedom and Privacy
Jim Warren
Founder, West Coast Computer Faire; Columnist, *MicroTimes*
Warren, who recently organized the First Annual Conference on Computers, Freedom & Privacy, is joined by privacy advocate John Gilmore and Alameda County Assistant DA Don Ingraham. They'll discuss recent *causes celebres* including Operation Sun Devil, the Craig Neidorf and Steve Jackson Games cases, government and private databases, and why law-abiding BBS operators should be worried about RICO.

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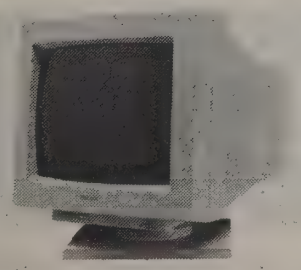

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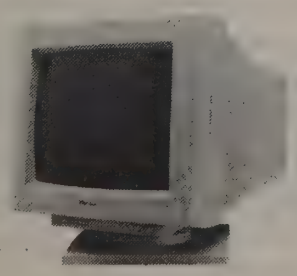

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POR-3 Portable Applications: Beyond Prospect Tracking (Chair: Bill Suydam, Editor-in-Chief, *Portable Office.*)
POR-4 Laptop vs. Desktop (Chair: Gene Talsky)

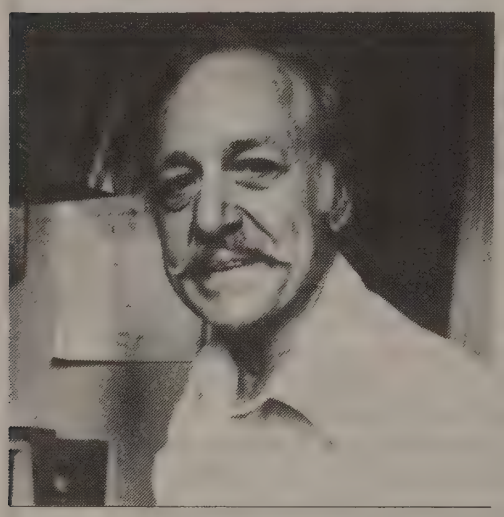
SMALL BUSINESS CONSIDERATIONS
Track Chair: Tim Bajarin, Executive Vice President, Creative Strategies Research International
SML-1 Equipping the Small Business (Chair: Tim Bajarin)
SML-2 Small Business Applications (Chair: Royal Farros, Chairman of the Board and Executive Vice President, T/Maker)
SML-3 Small Business Networking and Connectivity (Chair: Jonathan Scott, Vice President, Sales and Marketing, Traveling Software, Inc.)
SML-4 Realistic Business Planning (Presenter: Tim Berry, President, Palo Alto Software and Consulting)

EMERGING TECHNOLOGIES
Track Chair: Alan Hald, Chairman of the Board, MicroAge Computer Centers, Inc.
TEC-1 Personal and Everyday Artificial Intelligence (Chair: Alan Zeichick, Editor, *AI Expert*)
TEC-2 Is the Pen Mightier than the Keyboard? (Chair: Bruce Grant, Vice President, Technical Services, MicroAge Computer Centers, Inc..)
TEC-3 Virtual Reality Update (Chair: Alan Hald)
TEC-4 Smart Homes and Buildings

WINDOWS: MAKING THE MOST OF A GOOD THING
Track Chair: Alan Zeichick, Editor, *AI Expert*
WIN-1 Making the Move to Windows (Chair: Elizabeth Eva, Windows Supplement Editor, *InfoWorld*)
WIN-2 Becoming a Windows Power User (Chairs: Ron Person, Managing Partner, Ron Person & Co., and Geoffrey LeBlonde, President, LeBlonde Group)
WIN-3 Developing Windows Applications (Chair: Larry O'Brien, Editor, *Computer Language*)

SATURDAY, JUNE 1

All Day
The Importance Of Computers In Education
Rita Zokaei
President, Computer Literacy Program
Zokaei is joined by teacher and innovator Roberta Pournelle in a series of sessions on computers in the schools. Subjects range from "Finding Computer Money for Your School" to "Innovative Computer Education Programs: What Works and What Doesn't."



FRIDAY, MAY 31

3:30 pm
How To Upgrade Without Spending A Lot
Aubrey Pilgrim
Author, *Upgrade Your IBM Compatible and Save a Bundle*
Author and *MicroTimes* contributor Pilgrim delivers his latest hints for the budget-minded power user.

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- 1.2 or 1.44 MB Floppy Drive
- 1:1 Interleave 2HD/FD Controller
- AT Multi I/O (2S/1P/1G)
- Clock/Calendar With Battery Back-Up
- Enhanced 101 Keyboard
- **40 MB IDE Hard Drive**
- Mini Vertical Case + P.S.

16 MHz $760 20 MHz $830

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- 1 MB RAM Installed (Max 4 MB)
- Intel 286-12/16 MHz CPU
- 287-12/16 Math Co-Processor Socket
- 1.2 or 1.44 MB Floppy Drive
- 1:1 Interleave 2HD/FD Controller
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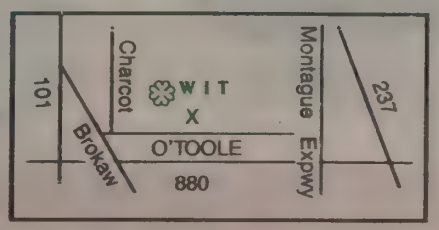

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- 204 MB Conner hard drive (15ms)
- 5.25″ (1.2 MB) TEAC floppy drive
- 3.5″ (1.44 MB) TEAC floppy drive
- IDE FDD/HDD controller
- 2 serial, 1 parallel, 1 game port
- 16-bit VGA card with 1 MB (1024x768x256)
- 14″ Super VGA monitor (1024x768 .28mm)
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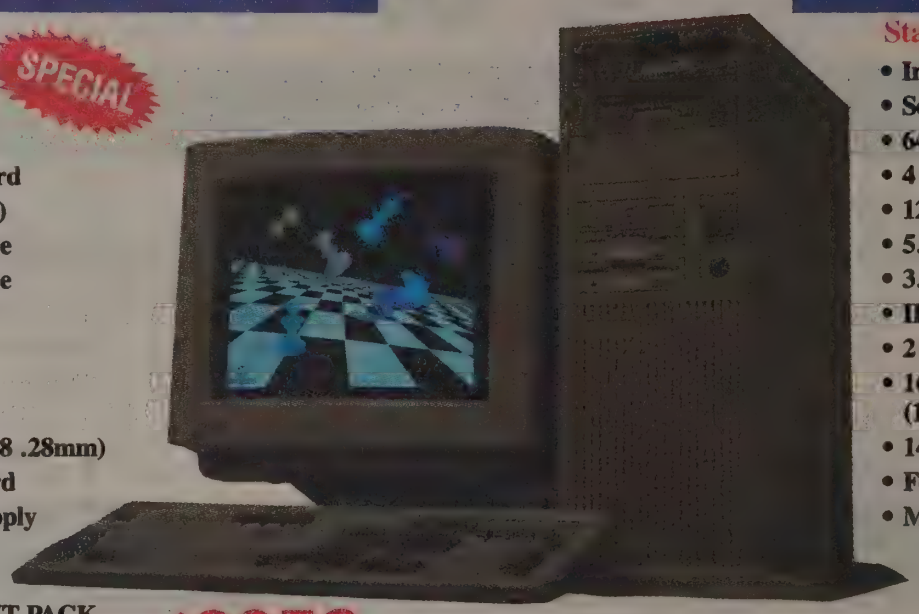

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- Socket for coprocessor
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- 120 MB Conner hard drive (18ms)
- 5.25″ (1.2 MB) TEAC floppy drive
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- IDE FDD/HDD controller
- 2 serial, 1 parallel, 1 game port
- 16-bit VGA card with 1 MB (1024x768x256)
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- Focus 2001/101 enhanced keyboard
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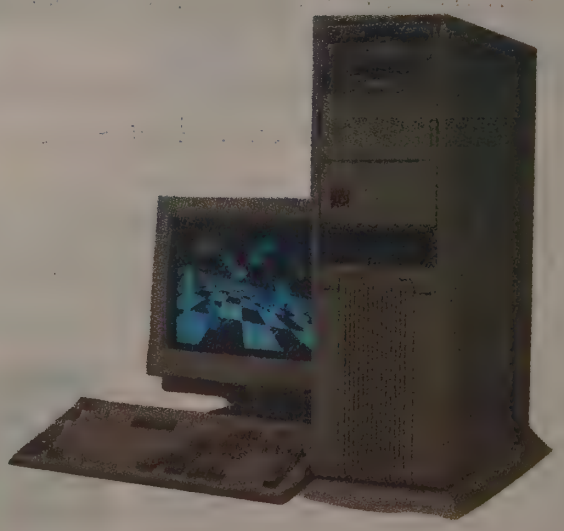
- Focus 2001/101 enhanced keyboard
- Full tower case with power supply
- MS-DOS manual



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- 1.44 MB TEAC Floppy Drive
- IDE Controller
- Mono or VGA Monitor 1024x768
- MGP Or 16-Bit VGA Card 1024x768 w/512K
- 2S/1P/1G
- 200W Power Supply
- Baby AT Case or Mini Upright
- 101 Enhanced Keyboard

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- 1.2 MB or 1.44 MB TEAC Floppy Drive
- IDE Controller
- Mono or VGA Monitor 1024x768
- MGP or 16-Bit VGA Card 1024x768
- 2S/1P/1G
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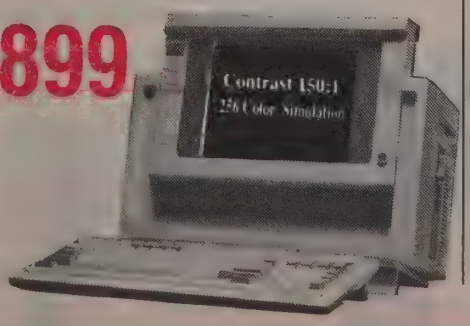

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- Ext Monitor Connector
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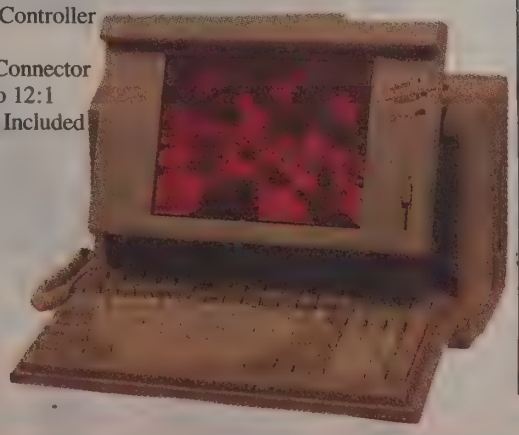

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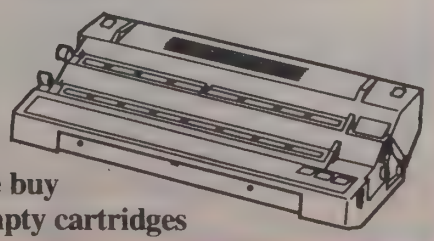

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- 120 MB hard drive
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- VGA monitor (0.28mm 1024x768)
- ART 101-key Keyboard

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- 1.2M floppy drive
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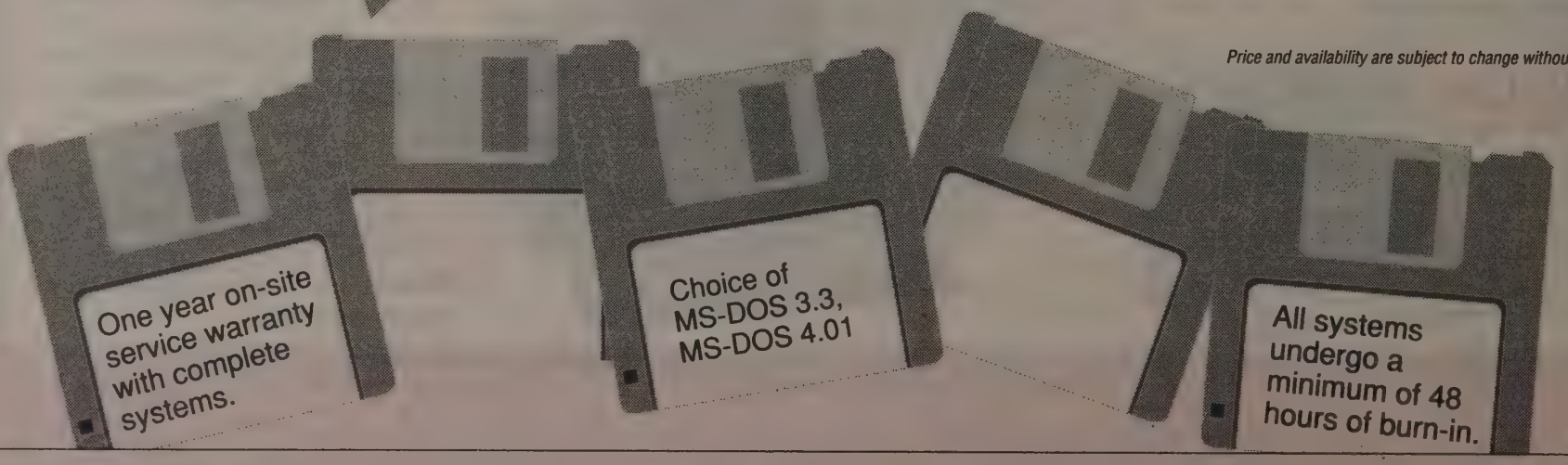
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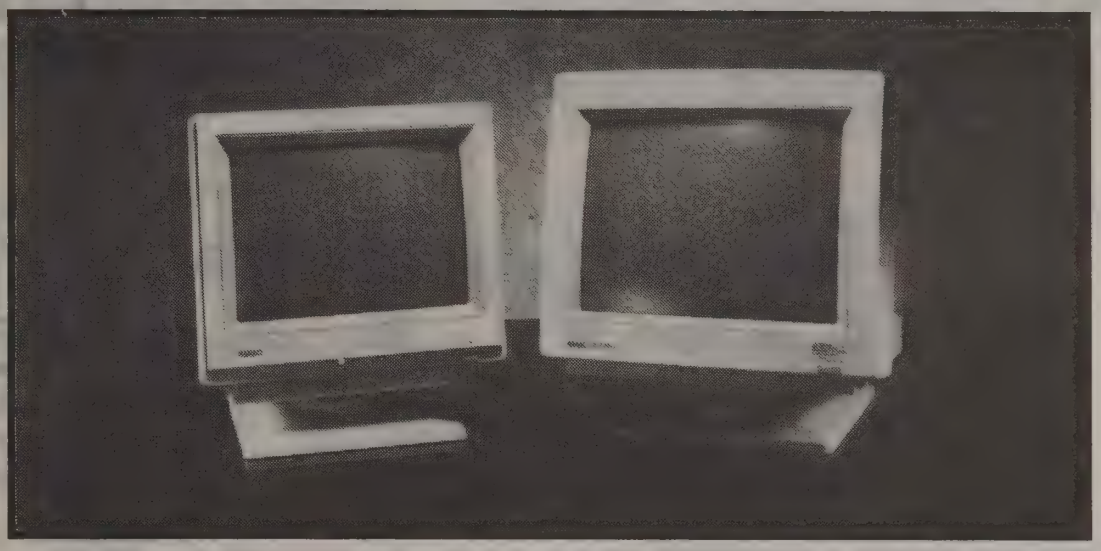

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- 1 MB RAM installed
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- 40 MB IDE hard drive
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- 16-bit VGA card
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- ART 101-key Keyboard

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- 12MHz motherboard
- 1 MB RAM installed
- Slim-line Case w/power supply
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- 1.2M or 1.44M floppy drive
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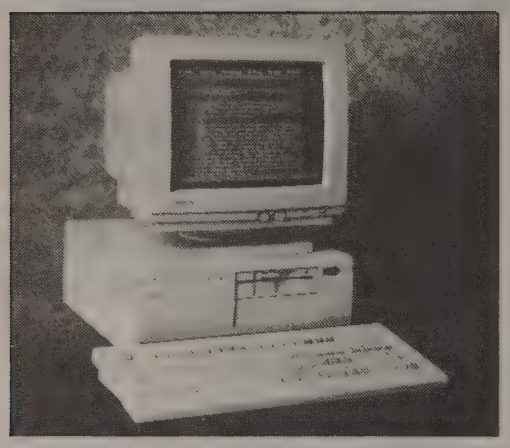

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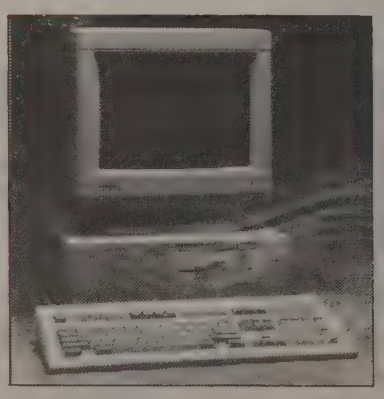
The Equity 286 PLUS extends Epson's line of desktop computers. This full-featured 286 is ideal for business and home users. It runs at 12MHz, supports VGA resolution of 640 x 480, and includes 1MB RAM upgradeable to 5MB. Users have a choice of single floppy 5.25" or 3.5" versions or a 40MB hard disk drive configuration with a 5.25" floppy drive. Design of the Equity 286 PLUS results in a small footprint and greater operating efficiency. (Suggested retail price of $1,099 for a single floppy configuration, or $1,599 for the hard drive version) Epson America, Inc., 20770 Madrona Ave., Torrance, CA 90509-2842. (213)782-5161.

THE PROFESSIONAL HOME OFFICE

The Professional Home Office, from US Integrated Technologies, is an all-in-one 20MHz 386SX computer system that includes a 9600 baud fax, 2400 baud modem, answering machine, 100MB hard drive VGA monitor, and mouse. In addition, the system comes standard with GeoWorks Ensemble. Ensemble is a multitasking, graphical, windowing environment with seven integrated business applications. ($3,395, a 286 version is $2,395) US Integrated Technologies, Inc., 3023 Research Dr., Hilltop Industrial Park, Richmond, CA 94806. 1-800-628-8312.



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The Super-386STc is a 20MHz 386SX personal computer that includes 2MB RAM, five expansion slots, one 5.25" 1.2MB floppy drive, and a 101-key keyboard, along with MS-DOS 4.01 and GW-Basic. A distinctive feature of the Super-386STc is its 16K cache memory, which noticeably improves per-

PRODUCT UPDATES

➤**PageMaker 4.01 for the Macintosh**, from **Aldus** features improvements designed to optimize PageMaker's power and performance as well as address certain problems found in v4.0. V4.01 is being mailed free to all registered owners of PageMaker 4.0 for the Macintosh. Aldus Corp., 411 First Ave. S., Seattle, WA 98104-2871. (206)628-2352.

➤**CASEWORKS, Inc.** has introduced a new program targeted at converting users of other Windows development tools to using **CASE:W Corp. Edition**. For a limited time, users of other applications may purchase CASE:W Corp. Edition for $495, 50% off the regular retail price of $995. CASEWORKS, Inc., 1 Dunwoody Pk., Suite 130, Atlanta, GA 30338. (404)399-6236.

➤**EMS Professional Shareware Libraries** has introduced the fourth edition of **WINLIB Library.** The library is a comprehensive collection of over 260 of the latest public domain and shareware programs and files designed specifically for serious users of MS-Windows 3.0. EMS Professional Shareware Libraries, (301)924-3594.

➤**NEC** is offering a manufacturer's rebate on MultiSync monitors and graphics boards purchased with qualifying NEC desktop and laptop systems. The rebate, called the **Power Pair High Resolution Rebate**, will be available to end users through June 30, 1991. NEC Technologies, Inc., 1255 Michael Dr., Wood Dale, IL 90191. (708)860-9500.

➤**Panacea** has released **ADI 4.1** (Autodesk Device Interface) versions of all its Display List Driver (DLD) products. Autodesk products use ADI to gain access to non-standard hardware devices like graphics boards. Panacea, Inc., Londonderry Sq., Suite 305, 50 Nashua Rd., Londonderry, NH 03053. 1-800-729-7420.

➤**Quicksoft**, publisher of **PC-Write**, is now shipping its **WordPerfect Filter.** The $19 conversion program imports and exports files between PC-Write or PC-Write Lite and word processors that accept WordPerfect 5.0 or 5.0 files. Quicksoft, Inc., (206)282-0452.

➤**Revolution Software** has released **VGA Dimmer v3.0**, an upgrade to its screen saver for IBM PC and compatibles. The new release supports both DOS and Microsoft Windows 3.0 environments. Revolution Software, Inc., 320 Route 24, Chester, NJ 07930. (201)879-8703.

➤**Mail Master v4.0** is a new version of the mailing list program from **ThinkSoft Corp**. ThinkSoft Corp., 1220 Broadway, Suite 604, New York, NY 10001. 1-800-533-3466.

➤**ScreenExtender 2.0** is a major upgrade to the **WordPerfect 5.0/5.1** screen utility. ScreenExtender increases productivity by eliminating the need to scroll the screen left and right while editing a proportional-spaced document. Registered users can update for $30.00 plus shipping and handling. Stairway Software, Inc., 700 Harris St., 204 Charlottesville, VA 22901. 1-800-782-4792.

➤**Ventura Software** is offering significant **discounts on popular software packages** that complement Ventura Publisher desktop publishing software—DOS/GEM, Windows, OS/2, and Macintosh versions. Discounts are effective through July 31, 1991. Ventura Software, Inc.; (408)422-0500.

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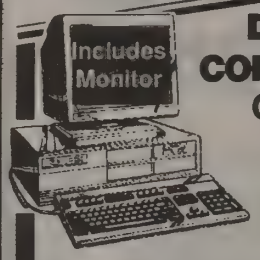
3. Money back if not delighted
30 day refund or exchange
If your new purchase isn't exactly what you need you can bring it back for a refund, or trade it in for a television, a stereo, or a fax machine! This is Uncle Ralph's, and we must have something you want!

DTK 286 COMPUTER

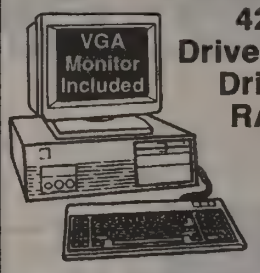


Complete With 40 MB Hard Drive & Monitor

From one of the world's largest computer makers, this IBM compatible comes complete with serial and parallel ports, 1.2MB floppy drive, 1MB RAM, 40MB hard drive, and monitor. Includes DOS, 1 year warranty, and Uncle Ralph's outstanding commitment to customer satisfaction.

COMPLETE SYSTEM $899 $45/Month

UR/MYLEX 386-SX



42 MB Hard Drive, 2 Floppy Drives, 2 MB RAM & VGA Color Monitor

One of the best made computers on the market. It's has a dependable & fast motherboard, comes with a great keyboard, and a superbly crafted "accu-fit" case. Complete system includes parallel and serial ports, 2 MB RAM, 1.2MB & 1.44MB floppy drives, fast 42 MB hard drive, VGA color monitor, and Uncle Ralph's excellent support and service.

$1699 $80/Month

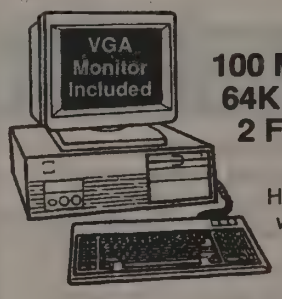
Complete System Includes MS-DOS & Mouse!

UR/OMNITEL 386-SX20

2 MB RAM, 80 MB Hard Drive, 64K Static RAM Cache, 2 Floppy Drives, & VGA Color Monitor

A truly superb computer with tremendous speed (28 Landmark) and outstanding new features. Complete with 2 Teac floppy drives, game, parallel, and 2 serial ports. This outstanding computer is housed in a small footprint case, and offers your choice of excellent keyboards.

$1999 $100 Month



Complete Systems Includes MS-DOS & a Free Mouse!

UR/MYLEX 25 MHZ 386

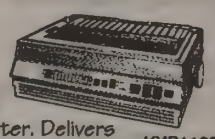
100 MB HD, 4MB RAM, 64K Static RAM Cache, 2 Floppy Drives, VGA Color Monitor

Here's a lot of computer for a very sharp price. Based on the excellent Mylex 8 layer motherboard with 64K static RAM cache. The system includes a 100MB hard drive, 2 TEAC floppy drives, enough RAM for high speed compiling and multi-tasking, your choice of excellent keyboards, parallel and 2 serial ports, and VGA monitor.

$2495 $125 Month

PRINTERS FOR EVERY JOB

PANASONIC'S OUTSTANDING NEAR LETTER QUALITY PRINTER

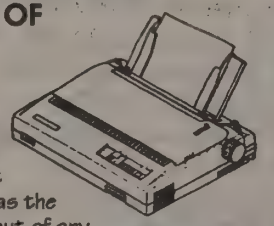


Here's a great buy on our most popular printer. Delivers excellent "near letter quality" print, and zooms along at 192 cps in the draft mode. Incudes automatic tractor feed with paper parking and self loading.

Panasonic Office Automation

2 Year Warranty! **Call for Best Price**

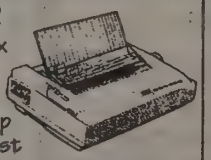
HIGH SPEED 24 PIN STAR PRINTER DEFINES NEW STANDARD OF QUALITY



This terrific printer is not only quiet and easy to use, but it's very fast (250 cps) and has the best looking output of any printer in its class.

$279 star micronics

BROTHER'S TOP OF THE LINE, HI-SPEED NEAR LETTER QUALITY PRINTER



Our fastest dot matrix printer produces text and graphics that are good enough for desk top publishers. It's very fast (370 cps) easy to use, & perfect for high output users.

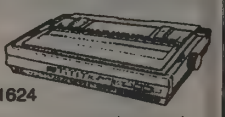
$299 $17/Month

COLOR UPGRADE AVAILABLE $75

brother

PANASONIC WIDE CARRIAGE 24-PIN PRINTER

LETTER QUALITY!

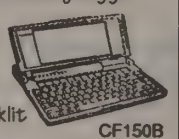


Here's a great buy on an outstanding wide carriage printer. It's easy to use, has excellent "letter quality" print, and an automatic self-loading tractor feed with paper parking. 2 Year Warranty!

Panasonic Office Automation **Call for Best Price**

LAPTOP COMPUTERS

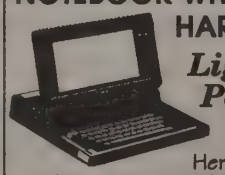
PANASONIC'S WONDERFUL NOTEBOOK COMPUTER



This tiny laptop is barely bigger than a notebook, but it's fast, fun, and has a new easy to read backlit screen. Includes 640k/RAM, AC adaptor and battery charger, and DOS.

Panasonic Office Automation **Call for Best Price**

BONDWELL 286 NOTEBOOK WITH 40 MB HARD DRIVE

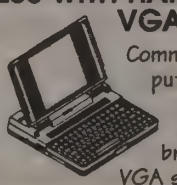


Light and Powerful

Here's a terrific buy! It weighs only 7 pounds, has a backlit screen, and 40 MB hard drive, and comes complete with an "extra' battery and external charger.

$1299 $65 Month

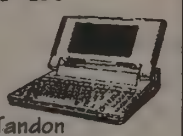
COMMAX NOTEBOOK 286 WITH HARD DRIVE & VGA SCREEN



Commax's tiny new computer comes complete with 20MB hard drive and a bright and sharp VGA screen. It's about the size of a small notebook, but has all the power of the most popular desktop computers. $1699

386-SX with 30 MB HARD DRIVE $2499

TANDON 386-SX *NOTEBOOK* LAPTOP COMPUTER



This highspeed Tandon 386-SX Laptop with 30 MB Harddrive and 2 MB RAM weighs less then 7 lbs. It has a VGA Screen, is expandable to 16 MB RAM and is available with a 60 MB Harddrive

In Stock NOW! Call for Best Price!

EXCELL 386-SX LAPTOP w/120 MB HARD DRIVE

Lightweight, comfortable, easy to use and carry

120 Mb Hard Drive Removable keyboard & VGA screen. Includes 2 serial ports, 1 parallel, and the latest version of DOS.

$2499 $125 Month

with 40 Mb Hard Drive $2299

MANAGER SPECIALS

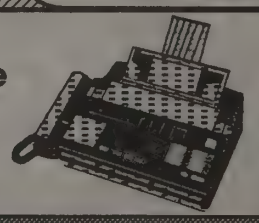
Info Mouse	As Low As...	$19
3 Year Warranty		
Game Software	As Low As...	$29
Info Scanner		$99
Conner Hard Drive 100MB		$399

FAX MACHINES

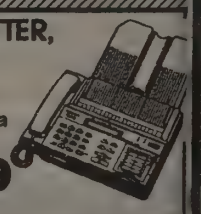
PANASONIC FAX With Answering Machine

Panasonic

$449 $22 Month



SHARP FAX WITH PAPER-CUTTER, AND 12 PAGE MEMORY



This unit is quick (13 sec), has a 12 page memory, papercutter, halftones, a phone/fax switch.

Works With Your Answering Machine

$769

As You've Heard Uncle Ralph's

4. One hour repair service
If you have a problem with one of our computers we can usually have it fixed within 1 hour. It's important to us that our customers remain satisfied.

5. 90-day interest-free financing
You can defer payment for 90 days and pay no interest at all! Or you can charge it to your Uncle Ralph's credit card account.. Sometimes we even take cash! Subject to lender approval.

6. Tech Support 7 days a week
Our Tech Dept. is open for you 7 days a week— til 8 pm Monday through Friday, and til 6 pm on weekends.

7. We'll keep you satisfied!
We've been putting smiles on faces for 9 years. We know what it takes to do a good job...and we do it everyday!

TDK DISKETTES

TDK 3.5" 720K	$7.99*
TDK 3.5" 1.44	$16.95*
TDK 5.25" 1.2MB	$9.95*

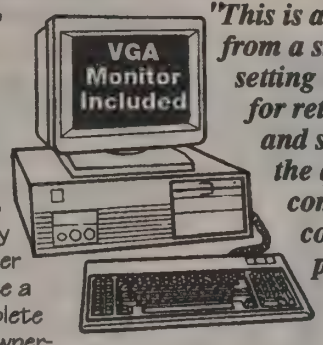
*Boxes of 10, Lifetime Guarantee

Head Cleaner	$5.95
Backup Tape Cleaner	$29.95

Call for On-Site Service & Consultation

UR/Omnitel 33 MHz 386

Static RAM Cache, 100MB Hard Drive, 4MB RAM, 2 Floppy Dirves, 1024x768 VGA Color Monitor & Tape Backup



"This is a fine machine from a store that is setting the standard for retail support and service ...Given the quality of the components, I consider the prices excellent."
Bernie Zilbergeld
Computer Currents

The OmniTel motherboard is making some big waves lately and we've packaged it with other excellent components to create a high performance system. Complete system includes hard drive, Viewperfect monitor, 512K VGA card, 2 floppy drives, 100 MB tape backup, parallel, game and 2 serial ports, DOS, Mouse, and your choice of excellent keyboards.

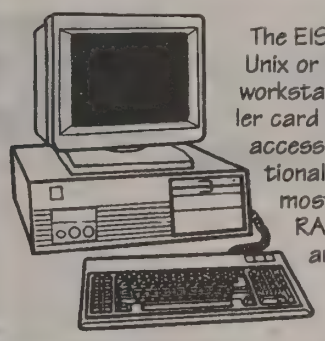
$2999
$160 Month

Complete System Includes MS-DOS & a Free Mouse!

"Super Find"
S.F. Focus Magazine

UR/Mylex 486-33 EISA

THE FASTEST 486 COMPUTER ON THE MARKET



The EISA bus makes this CPU superior for use as a Unix or Novell file server, or as a high powered CAD workstation. With Mylex's (optional) caching controller card and an SCSI hard drive it can achieve disk access times of 0.2 MS. With Mylex's EISA (optional) Ethernet Card it can double the speed of most networks. Base System includes 4 MB RAM, 2 floppy drives, serial and parallel ports, and keyboard. Video and Hard Drive separate.

"If I wanted to replace my entire system for optimum all around performance, I would build it from Mylex EISA based boards"
Michael N. George
Personal Workstation

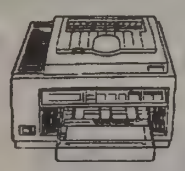
Double Your Network Speed!

$4,258
$212 Month

LASER PRINTERS and ACCESSORIES

PANASONIC 8 PAGE/MINUTE LASER PRINTER

Panasonic Office Automation OA



True laser output, 11 resident fonts, HP laserjet II emulation, 250 page paper tray, 512k RAM. Designed for high output applications, and

$849
$42 Month

KXP-4420

OKIDATA LASER PRINTER

OKIDATA OL800

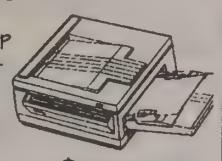
This entry level business page printer produces 8 ppm, 300 dpi publication quality output with crisp blacks.• 26 fonts/4 typefaces standard • HP II, IBM Pro & Diablo 630 compatible • Complete with 200-sheet paper trayand More!

Industry's Best Warranty
5 yrs on printhead, 1 yr parts/labor

$949
$47 Month

SUPER-FAST EVEREX/ABATON POSTSCRIPT LASER PRINTER

No Manual Switching Necessary.



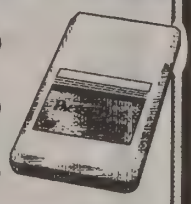
Automatically switches between Postscript and HP emulations, and automatically switches between parallel, serial and AppleTalk interfaces. With 2.5 Mb RAM, this new introduction from Everex may be the best Postscript buy to date. .

$1599
$85/Month

PC & Mac EVEREX

PACIFIC PAGE FONT CARTRIDGES & MEMORY UPGRADES

- 1 Megabyte Memory Boards $130
- Plotter in a Cartridges $200
- 25-In-One Font Cartridges $230

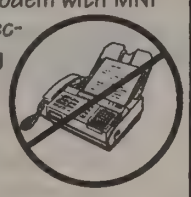


Limited to Stock on Hand

MODEMS

OMNITEL INTERNAL FAX /MODEM

9600 Baud Fax and 2400 Baud Modem with MNP data compression and error correction. Complete sending and receiving capabilities. Other models also available.



- ✓ V.42
- ✓ G3 Compatibility
- ✓ Easy to Use Software

$249

MODEMS

Everex • Cardinal
OmniTel • Anchor

2400 Baud From $79.95

MOTHERBOARDS

MYLEX • OMNITEL • DEICO MOTHERBOARDS IN STOCK

286 16Mhz - Deico	*$169*
386SX - Mylex	*$349*
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386 25MHz w/cache - Mylex	*$899*
386 33MHz w/cache - OmniTel	*Call*
486-25 - OmniTel	*Call*
486 33 MHz - Mylex	*$2799*

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GREAT PRICES ON
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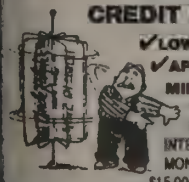
Western Digital 80 MB **$299**
Conner 100 MB **$399**
Conner 200 MB **$699**
Micropolis 150 MB ESDI **$699**
Micropolis 338 MB ESDI w/controller **$1499**

GET YOUR UNCLE RALPH'S CREDIT CARD *TODAY!*



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formance, particularly when running Windows. Hyundai is also including a copy of Windows 3.0 with all of the hard disk drive models. Configurations are available with 40, 100, 200, and 300MB hard disk drives. The floppy drive and IDE hard drive controllers are built into the motherboard. (Pricing starts at $1795 for the single floppy configuration to $4795 with a 300MB hard drive.) Hyundai Electronics America, Inc., 160 Bay-point Pkwy., San Jose, CA 95134. (408)473-9200.

SAMSUNG SENSOR BRINGS POWER TO THE HOME

The Sensor SP-386SX and SP-286, from Samsung, introduce a line of personal computers for the home and home office. Both PCs come with everything needed to just

plug-and-play. The 12MHz SP-286 includes a 40MB hard disk drive, a 1.44MB 3.5" floppy disk drive, 1MB RAM, and VGA graphics card and monitor. It is bundled with GeoWorks Ensemble, a complete software package that offers everything from word processing, graphics capabilities, and America Online telecommunications services. The SP-386SX includes a 40MB hard disk drive, 2MB RAM, SuperVGA, and an internal modem, as well as Windows 3.0, Norton Utilities 5.0, and Prodigy telecommunications services. (The suggested retail price for the SP-386SX is $1,995, and for the SP-286 is $1,399.) Samsung Information Systems America, Inc., 3655 N. First St., San Jose, CA 95134-1708. (408)434-5400.

SIMM's

STANDARD SIMMS
1x9-60 ..... '60
1x9-70 55
1x9-80 54
1x9-10 50
1x9-120 50
1x8-70 48
1x8-80 45
1x8-100 42
256x9-60 18
256x9-70 16
256x9-80 15
256x9-100 13
256x8-80 15
256x8-100 14
4Mx9-80 235
4Mx9-70 275
4Mx8-80 220
4Mx8-70 245

SIMMS FOR APPLE/MAC
MAC II, IIX, IICX, 2 SE/30
1 MB Kit ..... '65
4 MB Kit 250
16 MB Kit 2400

ZENITH SIMMS
386-25 1 MB Kit ..... '95
2 MB Kit 197
386 33 1 MB Kit 97
2 MB Kit 199
4 MB Kit 410

IBM PS2 MODELS
PS2 50Z, 55SX
2 MB SIMM (604) ..... '135
PS 2
2 MB SIMM (608) 135

• Please Call For Any Kind Of SIMM Module For Any Brand Not Listed
• SIPP's-Add 50¢ To Above Prices

HP LASERJET

MEMORY BOARD FOR
II, IID, III, 0 MB ..... '49

CPU's

80486 DX-33 ..... CALL
80486 DX-25 ..... CALL
80386 DX-33 ..... CALL
80386 DX-25 ..... CALL
80386 DX-20/16 ..... CALL
CALL FOR AMD CPU's

DRAM's

1 MGx1-120/100 ..... '4.50/4.85
1 MGx1-80/70 ..... 5.25/5.50

256x1-120/100 ..... 1.85/2.00
256x1-80/70 ..... 2.25/2.50

256x4-120/100 ..... 4.50/4.75
256x4-80/70 ..... 4.85/4.95

64x4-100/80 ..... 2.00/2.25
64x1-100/120 ..... 1.50/1.75

CALL FOR STATIC COLUMN, ZIPS & SOJ'S

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80387-16 DX 295
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PC PERIPHERALS

LOGITECH TRACKMAN PORTABLE

The TrackMan Portable Mouse, manufactured by Logitech and designed by frogdesign, represents a significant design and ergonomic breakthrough in pointing devices. The design goal was to create a three-button trackball that was small enough to be carried easily and used with a laptop computer. The solution is a vertically oriented arch that accommodates the natural position of the hand at rest on a flat surface. The TrackMan Portable can be used by right- or left-handed users. It can be attached directly to the side of the portable computer with a bracket or used as a standalone on the table. The device can also be used with a personal computer as an alternative to a mouse. ($169) Logitech, Inc., 6505 Kaiser Dr., Fremont, CA 94555. (415)795-8500.

KRIS PREMIER GRAPHICS

The KRIS PremierVGA controller card represents another step by KRIS Technologies in serving home offices and small- to medium-

Continued

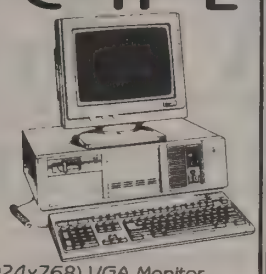
WHY BUY FROM ANYONE ELSE . . . WHEN YOU CAN BUY FROM THE BEST—
UNIVERSAL COMPUTER PRODUCTS

Special
10 MHz Turbo 8088
$295

386-33MHz
W/64 CACHE

- 0 Wait State on Motherboard
- Main Memory 1 MB
- Expandable to 2 MB/4 MB/8 MB
- Support Coprocessor Intel or Weitek
- AMI BIOS set up
- 2/Serial 1/Parallel 1/Game Port
- 101 Extended Keyboard
- 1.2 MB TEAC Floppy Drive
- HD Controller with 28MS 40 MB Hard Drive

$1150



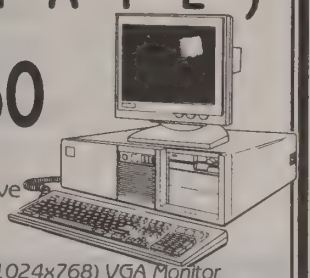
Monitor Options

Mono Monitor with Card	$95	Super VGA (1024x768) VGA Monitor with 16 bit Card	390
VGA Monitor with 16 bit Card	320		

386-25MHz
(0 WAIT STATE)

- Main Memory 1 MB
- Expandable to 2 MB/4 MB/8 MB
- Support Coprocessor Intel or Weitek
- 2/Serial 1/Parallel 1/Game Port
- 101 Extended Keyboard
- 1.2 MB TEAC Floppy Drive
- 1:1 Interleave Controller with 28MS 40 MB Hard Drive

$1050



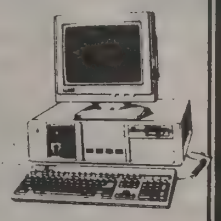
Monitor Options

Mono Monitor with Card	$95	Super VGA (1024x768) VGA Monitor with 16 bit Card	390
VGA Monitor with 16 bit Card	320		

386-16SX
(0 WAIT STATE)

- Main Memory 1 MB (EMS On Board)
- 8 Slots and Socket for Intel 80387 SX
- 200 W Approved Power Supply
- Real Time Clock with Battery Backup
- 2/Serial 1/Parallel 1/Game Port
- 101 Extended Keyboard
- 1.2 MB TEAC Floppy Drive
- 1:1 Interleave Hard Drive Controller with 40 MB Hard Drive

$795



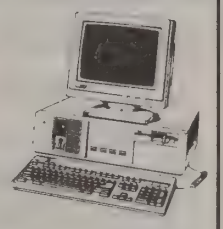
Monitor Options

Mono Monitor with Card	$95	Super VGA (1024x768) VGA Monitor with 16 bit Card	390
VGA Monitor with 16 bit Card	320		

286-12 MHz
(0 WAIT STATE)

- Main Memory 1 MB (EMS On Board)
- 8 Slots and Socket for Intel 80387
- Foot Print LED AT Case
- Real Time Clock with Battery Backup
- 2/Serial 1/Parallel 1/Game Port
- 101 Extended Keyboard
- 1.2 MB TEAC Floppy Drive
- 1:1 Interleave Hard Drive Controller with 40 MB Hard Drive

$590



Monitor Options

Mono Monitor with Card	$95	Super VGA (1024x768) VGA Monitor with 16 bit Card	390
VGA Monitor with 16 bit Card	320		

1 Year Parts/1 Year Labor Warranty On All Systems

CITIZEN™ GSX-140

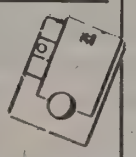
- 24 Pin for True Letter Quality
- 192 cps; 64 cps LQ
- LCD Front Panel Display
- 2 Year Warranty

$299

Color Option $59

TRACKMAN LOGITECH

- 300 dpi resolution
- Requires little desk space
- Thumb ball for extra comfort
- Small ball for extra precision



Serial mouse C9 320 dpi	$75
Bus mouse C9 320 dpi	$85
Serial TRACKMAN 320 dpi	$85.95
Bus TRACKMAN 320 dpi	$85.95
SCANMAN PLUS	$179
Catchword	$125

Panasonic KXP-1624

Wide Carriage, 24-Pin Dot Matrix Printer with many high printer features

- EZ set operator panel controls more than 20 functions
- 360x360 dpi resolution
- Multiple font capabilities - 2 draft and 5 letter quality

$395

Panasonic KXP-1124

- EZ set Front Panel controls over 20 functions
- 24 Pin for letter quality
- 192 CPS; 63 CPS LQ
- 360x360 dpi

$265

KXP-1180 192 CPS Draft/ 38 CPS NLQ	$159
Panasonic Ribbon	$10.95 each
Cut Sheet Feeders	CALL
Font Cards	CALL
Buffers	CALL

RODIME HARD DISKS

RO3128A 100 MB 19ms IDE	$469

ADD ON BOARD

AT I/O Card 25/1P/1G	$25
Mono Graphic/Printer	25
Color Graphic/Printer	35
XT High Density Floppy Cont	35
XT Hard Disk Cont	49
EGA Card	79
MFM 1:1 HD/FD Cont	69
IDE Dual HD/FD Cont	35
SCSI 1:1 HD/FD Cont	275
RLL 1:1 HD/FD Cont	98
Orchid Pro Designer w/1 MB	269
1024x768 Fastest VGA Card	

INTEL MATH CO-PROCESSORS

80287-10 For 286 System	$225
387 SX-16	315
387 DX-20	350
387 DX-25	440
387 DX-33	540

FLOPPY DRIVES

360K/1.2 MB Floppy Drive 5¼"	$60/70
720K/1.44 MB Floppy Drive 3½"	60/70

MAXTOR HARD DISKS

MT-7080A 80 MB 18ms IDE	$429
XT-1085 71 MB 28ms MFM	549
XT-4170 158 MB 14ms SCSI/ESDI	895/850
XT-4380 338 MB 16ms SCSI/ESDI	1295/1295
XT-8760 768 MB 16ms SCSI/ESDI	1850/1850

QUANTUM HARD DISKS

PRO80 AT 80 MB 19ms IDE	$469

NEC HARD DISKS

NEC D-3142 65 MB 23ms 3½ RLL	$299
NEC D-3661 110 MB 18ms 3½ ESDI	589
NEC D-5655 150 MB 18ms 5¼ ESDI	679

SEAGATE HARD DISKS

ST-225 20 MB	$189
ST-251-1 40 MB 28ms	249
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WESTERN DIGITAL

40 MB IDE 28ms w/Cont	$269
80 MB IDE 18ms w/Cont	489

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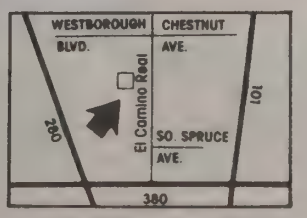


(Inside Fairway Plaza)

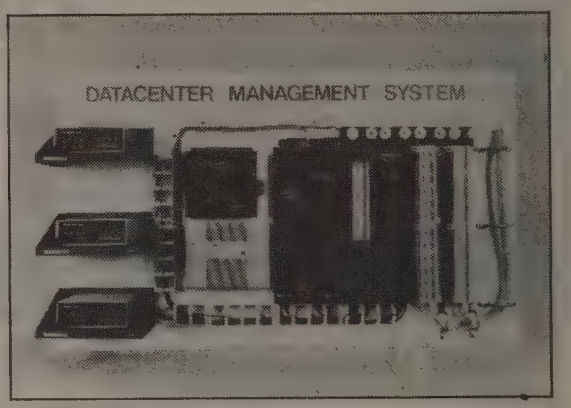
Prices Reflect 3% Cash Discount. Not responsible for misprints.

PRODUCT SPOTLIGHT

sized businesses with the products they need. Using a Tseng Labs ET4000 VGA chip, the KRIS PremierVGA is offered in configurations of 256K, 512K, and 1MB RAM. For configurations with 512K or higher, an upgrade chip is available that allows the display of up to thirty-two thousand colors. In addition to complete compatibility with all KRIS monitors, the card also supports most popular VGA and dual-frequency monitors, including NEC, Sony, Hitachi, and Mitsubishi. (The standard KRIS PremierVGA card with 256K RAM and supporting sixteen colors has a sugested retail price of $169.) KRIS Technologies, Inc., 260 E. Grand Ave., S. San Francisco, CA 94080. (415)875-6729.

DATA MANAGEMENT FROM MASTERCOM

The DataCenter Management System, from MasterCom, makes administering a LAN as easy as plugging in a phone. It organizes ushielded twisted pair (UTP) wiring as the network center, usually a phone closet, by replacing the multitude of wires with jacks similar to modular phones. This eliminates the expense and delay involved in having to call an outside technician every time the topology of the network is altered. The DataCenter supports both PC and Macintosh

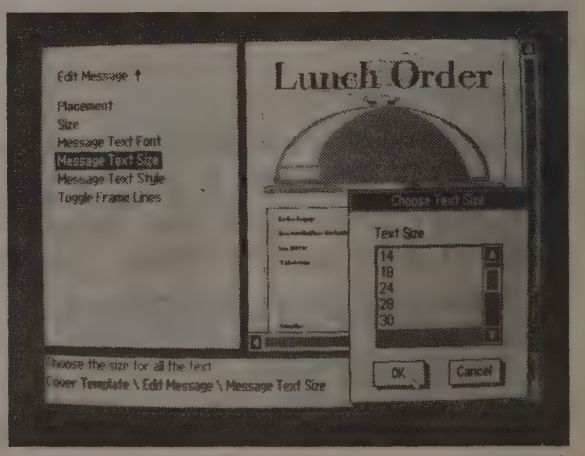


networks, and works in UNIX, Ethernet, Arcnet, Token Ring, and AppleTalk environments. It can also be used with PBX telephones and printers. MasterCom, Inc., 473 Sapena Ct., #24, Santa Clara, CA 95054. (408)748-8701.

PC SOFTWARE

UNISON WORLD FAX SOFTWARE

FaxBuilder is a multi-dimensional fax software package offering graphics and text capabilities designed to enhance the ap-



Continued

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ONLY $2.49 per disk

IBM SOFTWARE
FREEWARE & SHAREWARE
3½" & 5¼" DISKS

BUSINESS

AS EASY AS V.3.0 (123)-Powerful Lotus clone.
UTILITIES 1-2-3 (121)-Very useful Lotus utilities with macros, templates, hints and more.
E-2 FORM EXEC (529)-Menu driven form generator & filler powerful features!
LEGAL FORMS (134,135)-Over 100 legal forms that can be easily customized to your needs. (2 disk set)
MAIL MONSTER (136)-Powerful mail list manager. Sort, edit and print labels easily.
TIME & MONEY (145)-Menu driven record system for budgets, interest, etc.
EASY PROJECT V.1.2 (143)-Complete project management system w/automatic scheduling, calculations, charts & more. Dbase compatible.
PC-BOOKS (108)-Easy to learn General Ledger program.
CMATE-GL (101)-Full featured General Ledger.
PAINLESS ACCOUNTING (366,367,368)-Menu driven accounting system w/billing. One of the best (3 disk set).
SOAR V.1.92 (492,493)-Service oriented accounts receivable w/billing. (2 disk set).

EDUCATION

PLAY 'N LEARN (428)-6 wonderful programs for young children ages 18 months to 4.
ABC GAME (430)-6 games for your tots to play & learn by.
FRENCH 1 (425)-Learn beginning French. Menu driven.
ALGEBRAX (439)-Excellent Algebra 1 tutorial.
PC-TOUCH (186)-Learn and practice typing.
FUNNELS & BUCKETS (183)-Great learning game for kids!!
ANIMALS (182)-Math for kids.
IQ BUILDER (184)-Test IQ or build one. Great for teaching.
EDUCATE (502)-Disk jammed w/programs to teach kids math, English, Vocab, etc. Requires Basic.
SPANISH (464)-Spanish tutorial w/quizzes, multiple choice, etc.
FRENCH 2 V.1.1 (426)-After the basics, move to the 2nd level of French.
MAP (189)-Learn about the U.S., geography & Capitols. Great Graphics. Requires Basic.
AMY'S FIRST PRIMER (181)-6 delightful programs to teach the alphabet, numbers, shapes, colors, counting, problem solving, & more. Ages 4-8. Requires Basic.

HOME

FAMILY TREE (521)-Explore your family roots, descendants, family groups & more. Fully menu driven.
BIBLE Q (410)-Test your knowledge of the Bible. Great for studies.
RH-MAN V.3.3 (178)-Desktop utility, notepad, etc. Sidekick clone. Very Good!
CITY DESK V.7.1. (177)-Full featured desktop publishing system. Very Good!
PC-CHECK (253)-CheckBook & savings account record keeper.
VCR DATABASE (265)-Database for your VCR tapes & movies.
FINANCE (259)-Financial wizard. Calculates loans, amortizations, etc. 20 different calculations.
RECIPES V.1.0 (441)-Over 100 recipes to make you the hit of the party.
LOTT-O-LUCK (531)-Be the next big winner in 6/53. Includes database of winning numbers. You never know what will happen!!!
EXPRESS CHECK (520)-Easy to use checkbook program. Prints checks too!!
REAL ESTATE ANALYST (255)-Menu driven program for mortgages, interest, amortizations, analysis between renting or owning, plus more.
PC-RECIPE (462)-Computerize your recipe box. Program will recalculate ingredients.
CROSSWORD CREATOR V.3.30 (442)-Create crossword puzzles for fun or learning. Great for Crossword fanatics.
SUPERMUSIC JUKEBOX (285)-70 plus songs to turn your PC into a Jukebox.

WORD PROCESSING

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WPKIDS (348)-A Word Processor for kids!!!
WORDPERFECT 5.0 MACROS (450)-Disk filled with macros. A must!!
PC-STYLE & PC-READ (352)-Writing analysis program. Helps you write more professionally.
SPANISH/ENGLISH (453)-Program to translate any file from English to Spanish or vice versa.
WORDPERFECT 5.0 TUTORIAL (485,486)-WordPerfect tutorial learning system. Become an expert at WordPerfect!!
SLIC WORKS V.1.0-(525)-Powerful spreadsheet, database, word processor & communications program. FrameWork Clone.

UTILITIES

PD-SIDEWAYS (292)-Prints a file sideways on an Epson printer.
HP SOFT FONTS (298)-Laser fonts for HP LaserJet+.
AT UTILITIES (308)-Very useful utilities for your PC/AT.
BAKER'S DOZEN (311)-Buttonware's 12 best utilities.
AUTOMAXX V.2.2 (309)-Menu system & DOS Manager.
PC-FILE III V.4.0 (319)-Jim Button's file management system. Just about the best!!!
DIRECTORY SCANNER V.3.0 (314)-Xtree clone. DOS Shell.
PRO-MAN (326)-Very good hard disk management program.
EPSONSET (296)-Downloadable fonts for your Epson.
PRINTMASTER TO PRINTSHOP (237)-Convert PM to PS or vice versa.
LASERJET FONTS #2 (376)-Contains 10 point Roman & Helvetica fonts in bold & italic. Includes downloader program.

GAMES

YAHTZEE & PHRASE CRAZE (370)-2 great classics games.
LAS VEGAS (501)-Vegas games of skill.
PACMAN GAMES (432)-Disk filled with great versions of this classic.
STRIKER (212)-Pilot a helicopter and survive...Fast paced.
SUPER TREK V.1.0 (213)-One of the best versions!!
TAPPER (216)-Keep the beer flowin'. Also 2 other games.
SKILL (433)-Disk filled with games of skill.
BLACKJACK STRATEGY (201)-Not just a game. Learn Vegas strategy.
CASTAWAYS & S. AMERICA (196)-2 great adventures games.
CENTER FIELDER (197)-Pinball games played on a Baseball Field.
LAWN MOWER (209)-Mow 6.5 acres in 10 secs. without killing a gopher.
SCRABBLE (207)-An old favorite on computer.
UNO (215)-Excellent computer version.
ARCADE FUN #1 (434)-Disk jammed with arcade games. Requires CGA.
ALDO'S ADVENTURE (378)-Action arcade games of hazards, treasures, ramps, leadders. Requires EGA or VGA.
BURGER BLASTER (459)-Fast paced game. Try to build a perfect burger.
EGA-TREK (437)-One of the very best versions!!! Requires EGA.

ADULT

ASTROTIT (110)-Adult arcade game!!
B-WARE (114)-Adult entertainment trivia, poker, etc.
NASTY (116)-That says it all!!!
X-RATED PRINTMASTER (118)-Let your imagination take the best of you.
1 On 2 (354)-XXX Rated....Fantastic!!
X-RATED PRINTSHOP (500)-X-Rated pics for PrintShop.
EROTICA (526)-Sizzling, true to life animated show!!
FANTASY (527)-Text based Fantasy game. You supply the criteria and the program supplies the Fantasy.
INTERSEXION V.1.01 (373)-X-Rated monopoly game with 5 levels of PLAY!! Includes trivia, jokes & more.
BAD-BAD (111)-Adult adventure game.
MAXINE (115)-Like none before!!! Sit back and watch!!

"Get the Best of the Pack" GET YOUR **FREE** PACK!!

We pick the best of the pack and you save!!! All packs are 10 disk sets. loaded with programs that we feel are outstanding. If you purchase 3 packs the 4th pack is **free!!!**
Each pack is $19.95 (5¼" DISKS)
(3½" DISKS ARE $24.95)
Our packs come in the following categories:

#1 **ADULT**
Astrotit, Bad-Bad, Strip, Butterfly, Strip BlackJack, Get Lucky, Intersexion, Maxine, X-Rated Printmaster—1 on 2.

#2 **BUSINESS**
As Easy As, Formtool, Legal Forms, Cmate-GL, PC-File+, Mail Monster, Sliceworks.

#3 **EDUCATION**
Amy's First Primer, Animals, Fun with Numbers, Map, Tell Time, Kids Games, ABC Games, Funnels & Buckets, IQ Builder, Educate.

#4 **GAMES**
Center Fielder, Global Thermal Nuclear War, BlackJack Strategy, Striker, TurboBall, Aldo's Adventure, Pacman Games, Scrabble, Miniature Golf, Othello

#5 **HOME**
Lott-O-Luck, Finance, PC-Recipe, Loans, Bartender, Aquarium & Instant Paradise, Crossword Creator, The Diet Disk, Supermusic Jukebox, Notepad.

#6 **UTILITIES**
PD-Sideways, Baker's Dozen, Automaxx, Directory Scanner, Whereir, DBS-KAT, PC-File III, Disk Labels #1, Format Master, AT Utilities.

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OF 3½" DISKS ____ x $3.49 = $_____
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SHIPPING & HANDLING: $ 3.50
TOTAL $_____
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Make HSC your Source...

...for unusual, unique or useful electronics...
Hobbyists, Engineers and Technicians alike!

HSC has Kits...

...for those who may be beginning in electronics, or those who just want to have fun assembling a project. You can learn and end up with something fun or useful too! Many more are available, send a long SASE for a complete list with descriptions. The following are the easiest skill level:

C4486	Moisture Detector Kit	$6.50	C4487	Dual Lamp Flasher Kit	$3.75
C4516	Time Reaction Kit	$4.70	C4566	Fish Caller Kit	$4.50
C4657	Skin Resistance Monitor	$6.50	C5176	Telephone Hold Kit	$5.25
C6239	Fuzz Sound Kit	$11.20	C6356	Black Light Kit	$13.95
C6374	Jungle Bird Sound Kit	$6.50	C6406	Phasor Sound & Light Kit	$6.50

...and Kits...

...such as these slightly more challenging kits:

C4162	Strobe Kit	$20.95	C4422	Sound FX Generator Kit	$19.50
C5177	12VDC 1A Power Supply	$19.95	C6281	Stroboscope Kit	$22.50
C6351	Adjustable Timer Kit	$9.00	C6358	Proximity Alarm Kit	$14.00
C6362	Macho Meter Kit	$10.95	C6384	Logic Probe Kit	$12.75
C6392	I.R. Receiver Kit	$13.25	C6393	I.R. Transmitter Kit	$9.25
C6395	Car Fluid Level Kit	$16.95	C6442	20W+20W Stereo Amp	$20.95
C6446	Color Organ Kit	$9.95	C6447	Geiger Counter Kit	$39.95

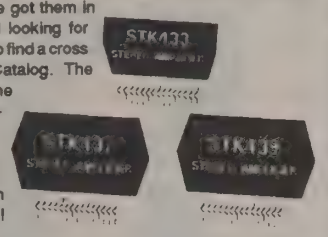
...and still more Kits!

...such as these more advanced kits (Warning! Not for Beginners!):

C6278	Nicad Zapper Kit	$19.95	AA-7	Active Antenna Kit	$24.95
AR-1	Aircraft Band Receiver	$24.95	CW-7	CMOS CW Keyer Kit	$24.95
FM-10	FM Stereo Transmitter	$29.95	FM-2	FM Wireless Mike/Preamp	$7.95
FM-3	FM Mini Wireless Mike	$16.95	FM-4	Hi Pwr FM Wireless Mike	$12.95
FR-146	2 Meter FM Ham Receiver	$29.95	FR-220	1 1/4 Meter FM Receiver	$29.95
HR-20	20 Meter Ham Receiver	$27.95	HR-30	30 Meter Ham Receiver	$27.95
HR-40	40 Meter Ham Receiver	$27.95	HR-80	80 Meter Ham Receiver	$27.95

Stereo Amplifier Modules

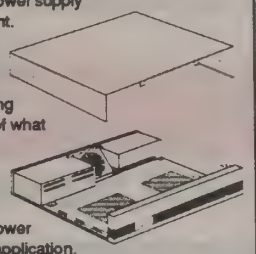
These Stereo Amplifier Modules by Sanyo are the easiest way there is to amplify an audio signal...no wonder they are used in so many consumer stereo products! We got these as surplus inventory from a major stereo equipment manufacturer, and we got them in quantities that let us price them right! We are still looking for specification sheets for these items, but we were able to find a cross reference in the NTE Replacement Semiconductor Catalog. The STK-433 crosses to a 7 watt-per-channel item, and the STK-437 and STK-439 both cross to a 15 watt-per-channel item, although we suspect the 437 is probably closer to 10 watts. The Vcc max is 56 Volts, and it would appear that they need to be properly attached to a good sized heatsink. We do provide a pin connection diagram with each one so you can amplify right away!



STK-433	HSC #12206	$3.95
STK-437	HSC #12123	$6.95
STK-439	HSC #12124	$6.95

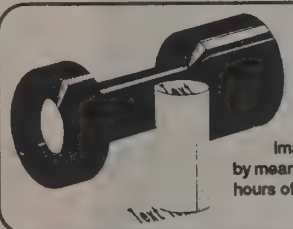
Low Profile Drive Enclosures

The model shown is the perfect set-up for one or two 3 1/2" hard drives. It is brand-new and measures 13 1/2" wide by 2 1/4" high and 14 1/2" deep. It features a built-in power supply (roughly 30 watts) and an angled 12 VDC fan that allows a low height. 5 1/4" drives would physically fit, but you may have to fabricate some brackets for that application, and the power supply may not be enough for two drives. Once you remove the custom PC board and make a different connector for the fan, simply bolt in your drives, hang a cable out the back and you have a tidy installation for a fraction of what you would expect to pay! Shipping weight is approximately 12 lbs. Also available, but not shown, is a brand-new empty case (no power supply or fan) that measures 7 1/2" x 2 3/4" x 14". These will accept one half-height drive, floppy or hard (5 1/4" direct, or 3 1/2" with appropriate brackets and bezel) and leave room for a small power supply, although the rear panel may need to be reworked for your application. They are light beige in color, and shipping weight is approx. 4 lbs.



Single Drive Case, no power supply HSC #12031 $19.95
Dual Drive Case with power supply HSC #12173 $29.00

...And now for Something Completely Different!

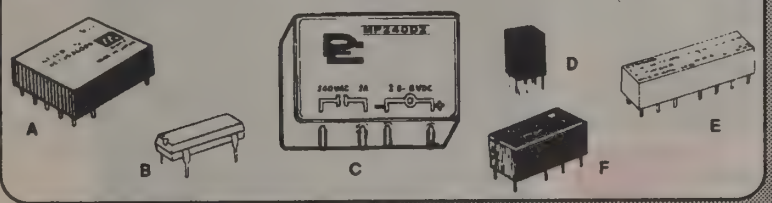


Here is a good reason to keep checking in with HSC to see what's new...an image-transmitting collimated Fiber-optic rod! This is a chunk of glass 1.1" dia. x 4.1" long that has some amazing optical properties. It is made up of millions of tiny (5 micron) glass strands fused together into one solid piece of glass, polished to an optical flat on either end. When an image is focused on one end, or when the rod is set directly onto a piece if paper with an image, it transmits the image to the other end with astounding resolution. It's as if the image just jumped to the other end of the rod! This optical marvel is from some piece of government contract gear (probably involving an infra-red image converter tube) that must have cost a fortune, but our price is sure to intrigue you. Each rod is held in a beautifully machined aluminum housing (2 3/4" dia. x 6 5/8" long) by means of RTV Silicone at one end, but the rod may be pushed out after carefully cutting the adhesive with a sharp blade. It will make a great executive desk-top plaything, providing hours of introspective focus. If you find a clever use for one, let us know! Shipping weight approx. 2 lb. HSC #12154

$39.00

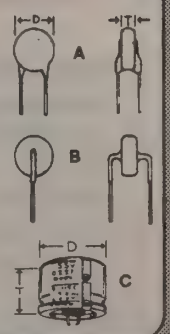
Small Relays

Mfr.	Mfr. #	Coil V.	Contacts	Type	Style	HSC#	Price
Aromat	RF1-DC9V-H1	12VDC	30uA-3mA RF	SPDT-RF	A	5892	.99
MRI	D43-1	3.6 - 10VDC	Solid State .5A	SPST-SSR	B	11970	2.49
P.E.	MP240D2	3.6 - 6VDC	Solid State 2A	SPST-SSR	C	10619	1.95
P & B	T20P1-09	9VDC	1A 24VDC	SPDT	D	93021	1.50
Aromat	DS4E-M-DC5V	5VDC	2A 30VDC	4PDT	E	10419	2.50
Omron	G6A-274P-ST-US	24VDC	2A 24VDC	DPDT	F	11083	1.50



Hard-to-Find Capacitors

Mfr.	Value	Volts	Style	"D"	"T"	HSC#	Price
High Voltage Disc Ceramics:							
MDC	25 pF	3KV	A	.450	.150	12229	.25
MDC	400 pF	3KV	A	.450	.150	12231	.25
MDC	1000 pF	15KV	B	.800	.350	93021	.75
MDC	1500 pF	6KV	A	.675	.200	12230	.35
MDC	1600 pF	3KV	A	.550	.150	12226	.25
MDC	1800 pF	10KV	A	1.050	.250	11183	1.25
MDC	5000 pF	3KV	A	.850	.150	12232	.25
MDC	5000 pF	4KV	A	1.050	.150	93022	.30
Erie	.002 uF	10KV	B	1.050	.250	7819	1.25
High Value Electrolytics (for CMOS Back-up, etc.) :							
Sohio	.047 F	5.5VDC	C	.500	.300	10771	.49
NEC	.22 F	5.5VDC	C	.625	.425	12248	.49

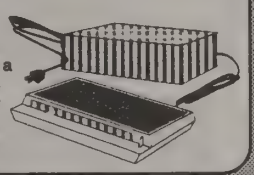


Color Printer for the Dedicated Hacker...

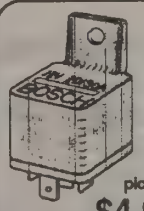
...made for Ramtek by Shinko, Japan, (Model # CHC-33) is for the serious hacker only...come on, we know you are out there! For starters, check out these specs: 220VAC! RGB+Sync video input to four BNC connectors. Fixed 800 element thermal print head (no ink-jets to clog, no moving head to adjust!). Full-width acetate "ribbon" with yellow, magenta and cyan areas. Prints on plain tractor-feed paper or overhead projector film by moving it past the print head three times, once for each color. Print resolution is 4 dot/mm or about 100 dots/in. The color ribbons are available through an address we provide you. Provided with 70-page extract from huge technical manual, including specifications and schematics, as well as setup and use info. HSC #11773 New in the box, approx. 44 pounds, now only $99.00!

Cable TV Converter has wealth of parts...

...including a varactor tuner, 36-position slide switch, RF modulator, power supply, etc. These units, made by Hamlin (model # MCC-4000-3) are definitely used, and show it, but they are all tested working, so you are assured good parts. Of course, these are not for use as a means to receive free cable TV! You will need to talk to your local cable company for service, but if you are looking for a treasure trove of RF type parts, this is your type of item, at only $10.00! Sorry, we have no documentation. HSC #11799 **$10.00**



High Current 12VDC SPDT Relay



If you have a European automobile, you probably recognize this relay...It is used in everything from BMW's to Mercedes to Maseratis! These high-reliability Bosch items are just the ticket for those high-current DC switching problems...20 Amp contacts inside a one inch cube! The contacts are standard 1/4" spade lugs, and there is a handy mounting tab on the back edge. The coil resistance is approximately 90 ohms. See what your BMW dealer gets for these items, then, when you have picked yourself up off the floor, compare that against our price of $4.95! HSC #11424

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These tiny DC - DC Converters are perfect for those projects where you need a little bit of +12VDC or -12VDC, like op amps or older EPROMS. Made by Elpac/TDK, these PC Mount packages are only .5 x .5 x 1.25" and accept from 3 to 7VDC for input. They put out 12VDC at 25 mA. Get several of each for your bench stock!

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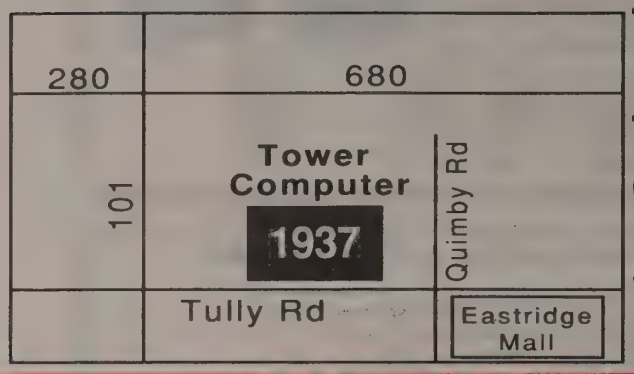

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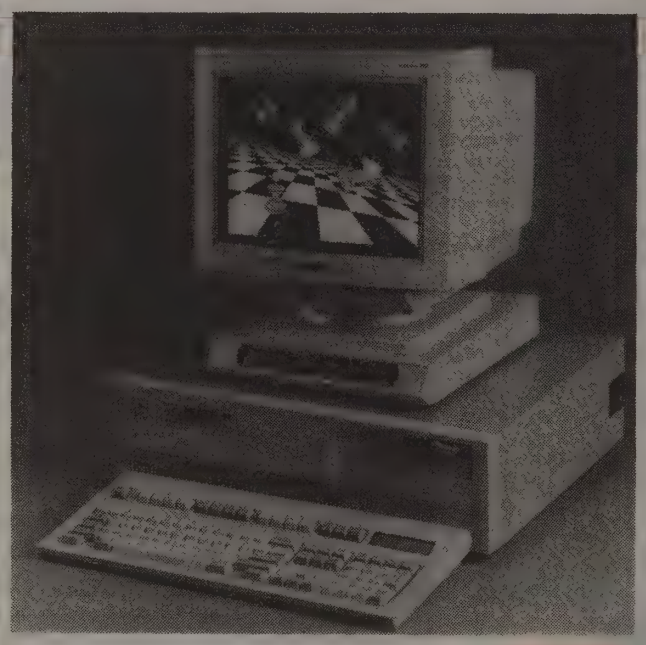

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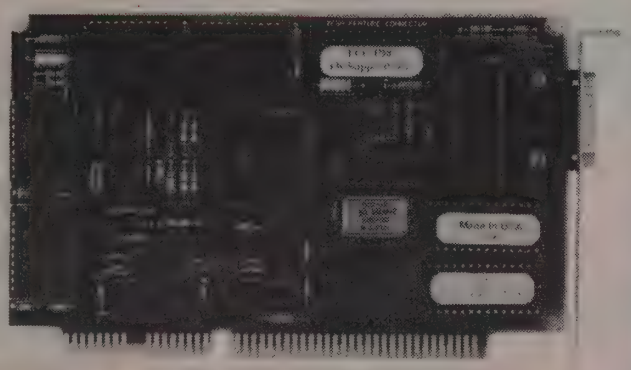

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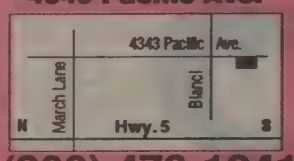

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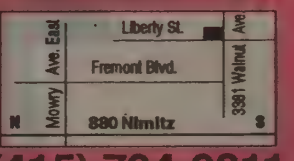

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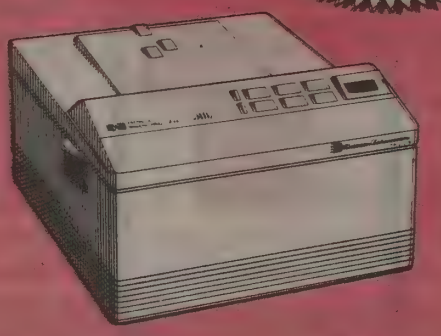

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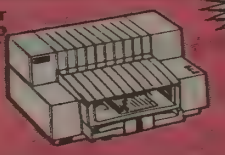

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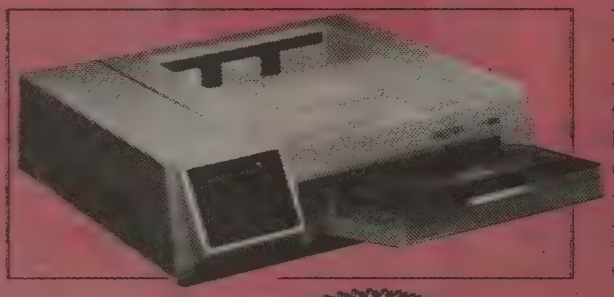

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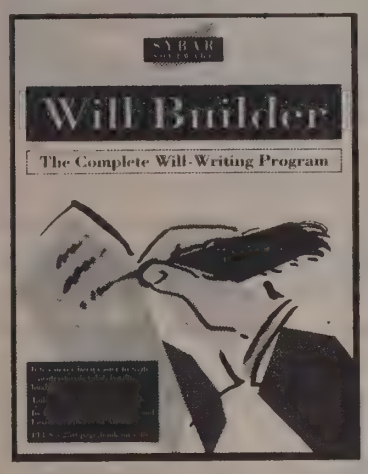
Will Builder is sophisticated self-help legal software that produces a professional, valid, and legally-binding will. The program tailors itself to your specific family situation and the laws of your state. You get clear, responsible guidance throughout the whole process with comprehensive on-screen legal help. Will Builder also allows you to include provisions for a living will, information about power of attorney, and a letter to the executor. ($59.95) Sybex Computer Books, Inc., 2021 Challenger Dr., Alameda, CA 94501. (415)523-8233.



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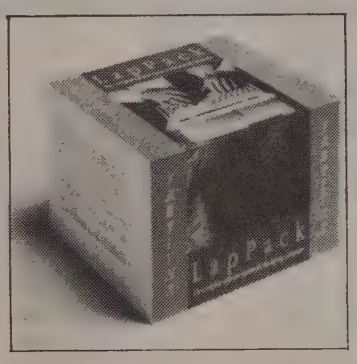
FastLynx LapPack brings together the power of ten personal computer productivity software products in one economical package for laptop computers. The LapPack includes several Rupp Corp. products, including FastLynx, a file transfer program; FastLock, a hard disk locking utility; MergeIt! Phonelist, a portable telephone list utility; and FastJuice, a new battery gauge for laptops. Also in this package is SwitchIt, a utility that lets users instantly switch between multiple programs and files; The Maximizer, a contact management software; EZC Smart Cursor, a cursor control and enhancement product; Sitback, a memory resident backup utility; CO/Session, a remote-control communications software product; and the MS-DOS Software Pack. The MS-DOS Pack includes everything necessary to work with CompuServe. ($299.95) Rupp Corp, 7285 Franklin Ave., Los Angeles, CA 90046. 1-800-852-RUPP.



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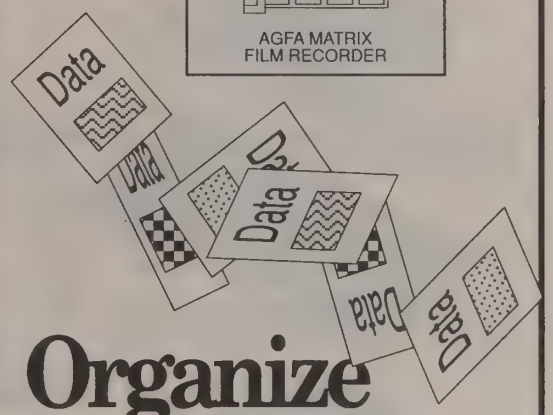

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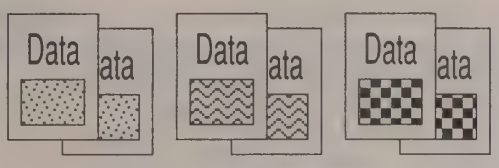

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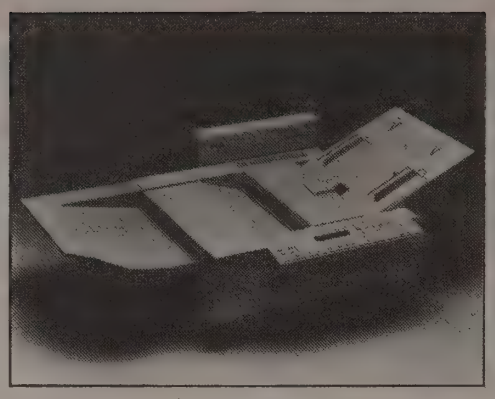
The software includes more than 350 fonts and supports the HP LaserJet PCL page description language, as well as ASCII and PCX. Incoming faxes can be printed on the 7021 facsimile, an optional dedicated laser printer, stored in the network file server, or sent directly to an email box. ($6,995, customers who own the Xerox 7020 or 7021 fax can upgrade for $2,995.) Xerox Corp., Xerox Centre, 101 Continental Blvd., El Segundo, CA 90245. (213)333-7000.



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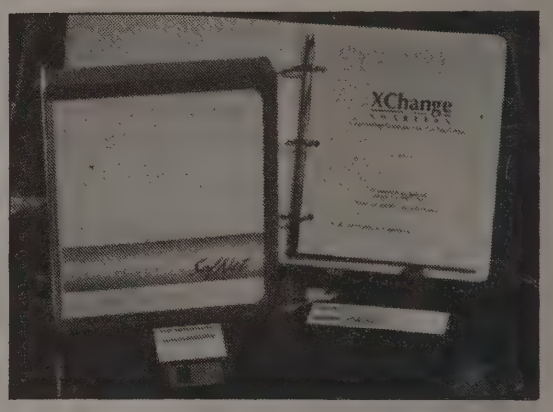

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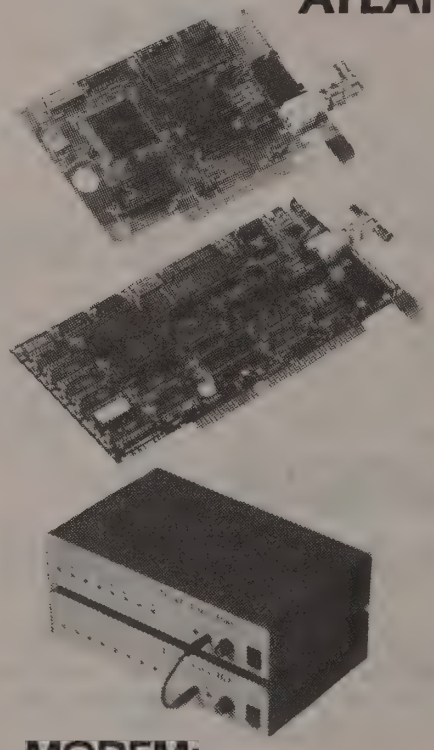

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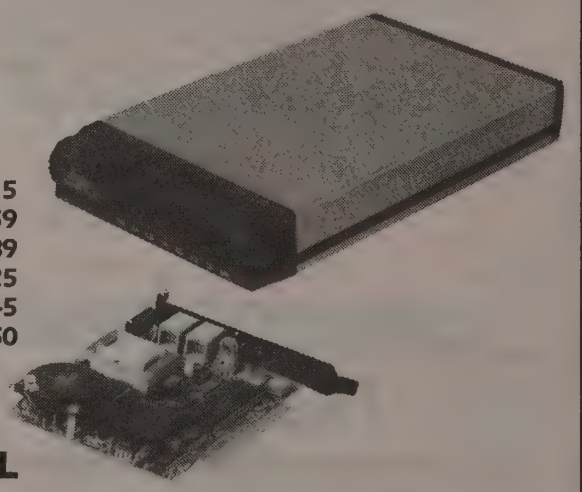

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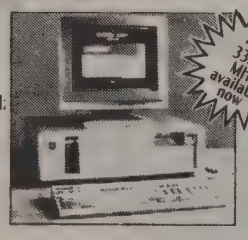

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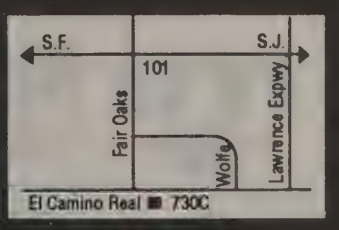

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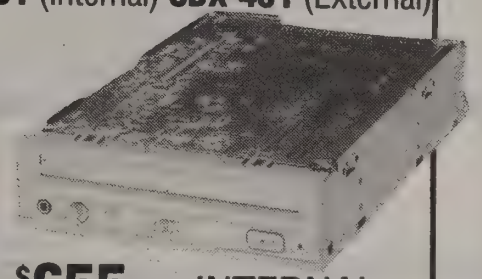

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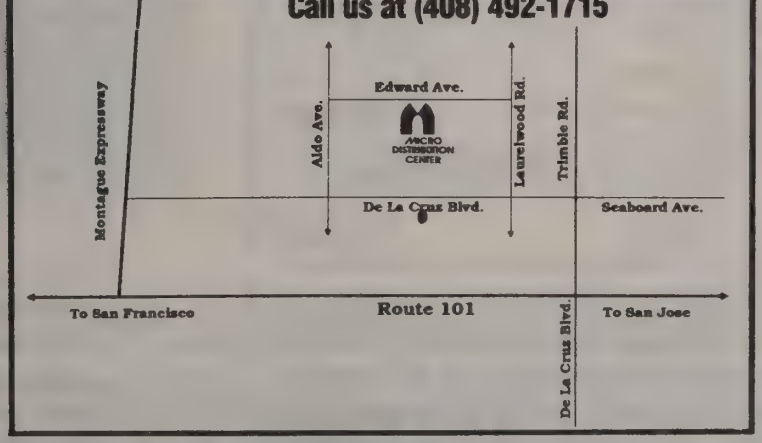

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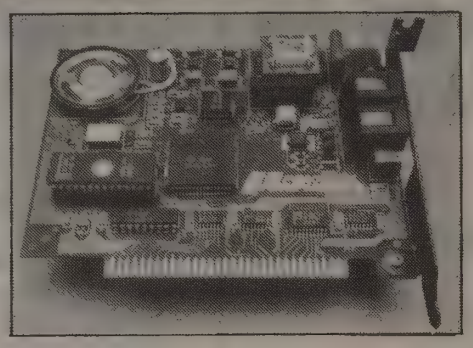
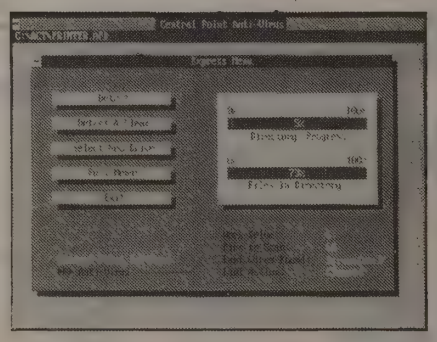


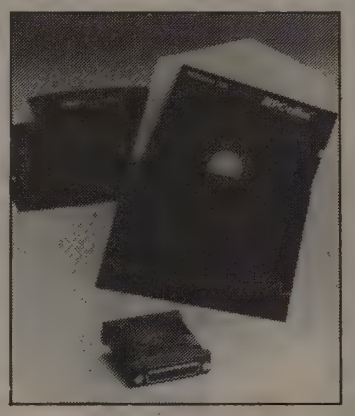
The PM2400 SendFAX modem, by Practical Peripherals, is a full-featured 2400 bps modem that also provides fax transmission at 4800 bps. This half-card internal modem features Hayes 2400 Smartmodem compatibility plus fax compatibility with all Group III systems, including text and graphics transmissions. The PM2400 SendFAX modem can send ASCII (text), PCX (PC Paintbrush), and TIFF (scanner) files. Other key features include automatic answer and redial, and title page and page header capability. ($229) Practical Peripherals, Inc., 31245 La Baya Dr., Westlake Village, CA 91362. (818)706-0333.

PC VIRUS PROTECTION

CENTRAL POINT VIRUS PROTECTION



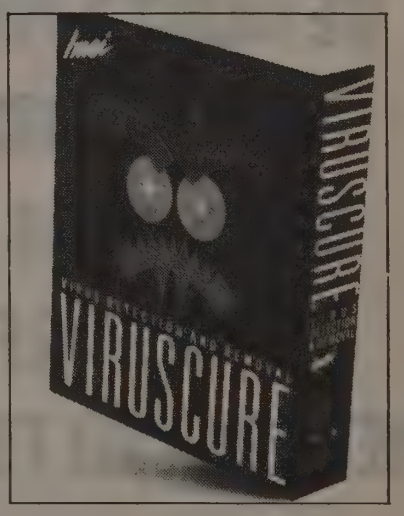
Central Point Anti-Virus is a new software package that combines virus protection technology with a comprehensive support program. This program detects, eliminates, and prevents infection caused by more than four hundred viruses in DOS, Windows, and networked environments. The support program, including a twenty-four-hour hotline and quarterly mailings of information about new viruses, will provide ongoing protection against future viruses. Unlike other virus protection products, Current Point expands existing virus protection technology with file immunization that makes executable files self-protecting, and with a memory-resident module that offers the same level of protection as the main application. ($129) Central Point Software, Inc., 15220 N.W. Greenbrier Pkwy., #200, Beaverton, OR 97006. (503)690-8090.



VIRUS PROTECTION WITH PC-CILLIN

PC-cillin provides anti-viral protection that immunizes MS-DOS and LAN computer systems for all known and future viruses and provides a solution for boot sector damage recovery. Upon installation, PC-cillin automatically stores crucial boot sector data and partition table information into its external hardware memory. If the system's hard disk crashes as a result of a virus, the program will download the isolated virus-free data and provide boot sector damage recovery without system degradation. PC-cillin consists of a virus scan and a TSR virus filter with twelve viral traps that seek and identify viruses. ($139) Trend Micro Devices, Inc., 2421 W. 205th St., Suite D-100, Torrance, CA 90501. (213)782-8190.

IMSI VIRUSCURE PLUS



VirusCure Plus, an anti-virus program that identifies and removes viruses, contains the TSR module called Protect. When loaded into memory, Protect, which occupies less than 25K, prevents any virus from invading your PC. VirusCure Plus creates signature files specific to your computer. The program will generate a warning whenever suspected changes occur in DOS, BIOS, boot sector, partition table, or other critical system files. Purchasers of VirusCure Plus can receive free upgrades via the IMSI BBS for two years from the date of registra-

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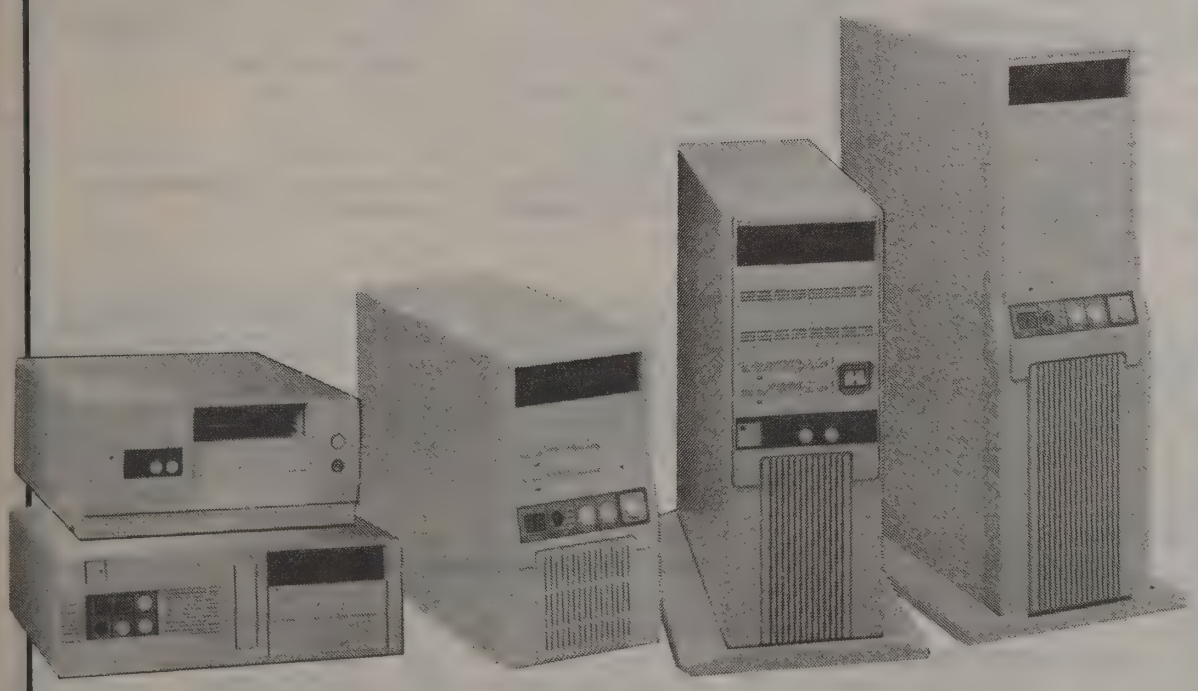

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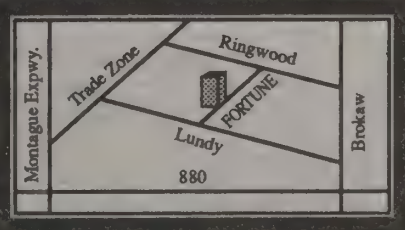

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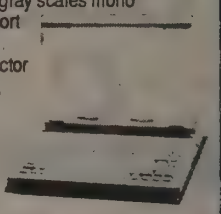
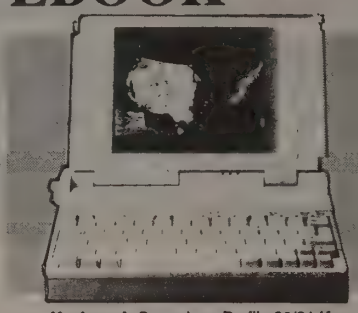
- 80386SX-16 Intel microprocessor
- AMI 386 ver.BIOS
- 2MB SIMM expandable to 6MB
- One 3.5" FDD & one 40MB HDD
- 1 Serial and 1 parallel port
- LCD display w/16 level gray scales mono w/VGA/EGA/CGA support
- Internal modem slot
- Ext. video (VGA) connector
- 3-Way: AC/car adaptor, battery pack (optional)
- 85/86 keys, multi-language ALPS tactile keyboard



New! PC NOTEBOOK

Architecture	IIBM PC/AT compatible (AMI BIOS)
CPU	80386SX 16MHz Runs at 8/16MHz software selectable
Co-Processor	80387SX (End-user installed option)
Core Logic	Toshiba
DRAM Memory	Basic 2.0MB, expandable to 4.0MB EMS support (LIM 4.0)
I/O Interface	RS-232C x 1 (Async, 9-pin) External 5.25" FDD/Printer port VGA Output (15-pin) PS/2 compatible port External 101/102 keyboard adaptor for mouse port External expansion box port
I/O Slot	Expansion memory slot x 2MB (End-user selectable option)
Disk Drive	3.5" FDD x 1 (1.44MB) 2.5" HDD x 1 (20 or 40MB)
Power Supply	Cartridge type Ni-Cad battery with external AC Adaptor/Recharger
Screen	VGA compatible screen (640 x 480 dots) Black & White LCD with Backlit (CCFT) 16/32 Gray Scales



Keyboard	Super Low-Profile 80/81 Keys (101/102 keys emulation)
Modem Slot	Internal modem/FAX slot (End-user installation option)
Dimensions	11.0" x 8.5" x 1.98" (W x D x H)
Weight	6.3 Lbs.Includes HDD, FDD & Battery

MAIN MATERIAL VENDOR LIST

LCD: EPSON — HDD: CONNER
FDD: MATSUSHITA — Battery: SANYO
Keyboard: ALPS — Motherboard: TOSHIBA
Inverter: EPSON

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80386SX 20MHz - Call!

MICRO-L 486-25/33 EISA Cache $2,645

- Intel 80486-25MHz CPU, Lndmk: 111.80 MHz
- CMOS Set-up, MIPS: 10.979
- CPU Built-in 1st level 8KB Cache memory with 2nd level 256KB Cache memory
- 4MB RAM expandable to 64MB on-board
- Supports external Weitek 4167
- Eight expansion slots (Six 32-bit, two 16-Bit ISA)
- AMI/Award 486 BIOS supports shadow RAM
- 1.2MB and 1.44MB Foppy drives (TEAC)
- 2 serial, 1 parallel ports
- 1:1 interleave ESDI controller with 32k Cache or IDE
- Keytronics (USA) or Mytek (click-type) 101 keyboard
- Tower case w/230W Power Supply/7 bay drive/digital display w/230W power supply
- **33MHz (Lndmk : 146.50, MIPS: 14.489) add $650**

STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	No Video & Monitor	14" VGA 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440	14" Multiscan 1024 x 768 Sony 1304**
Basic System	2,645	3,085	3,275	3,525
WITH HARD DRIVE				
80MB - IDE	3,035	3,475	3,665	3,965
100MB - IDE	3,070	3,510	3,970	4,100
200MB, 15ms - IDE	3,658	3,810	4,015	4,425
*338MB, 16ms - ESDI	4,020	4,460	4,645	4,940

*Maxtor Drive ** ORCHID ProDesigner II - 1MB

MICRO-L 486-25 AT Cache $2,125

- Intel 80486-25MHz CPU, Lndmk: 114.10 MHz
- CMOS Set-up, MIPS: 11.104
- CPU Built-in 1st level 8KB Cache memory with 2nd level 256KB Cache memory
- 4MB RAM expandable to 16MB on-board
- Supports external Weitek 4167
- Eight 16-bit slots
- AMI/Award 486 BIOS supports Shadow RAM
- 1.2MB and 1.44MB Floppy drives (TEAC)
- 2 serial, 1 parallel ports
- 1:1 interleave ESDI controller with 32k Cache or IDE
- Keytronics (USA) or Mytek (click-type)101 keyboard
- Tower case w//7 bay drive/digital display/230W P/S
- **33MHz (Lndmk: 149.60, MIPS: 14.597) add $340**

STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	No Video & Monitor	14" VGA 1024 x768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440	14" Multiscan 1024 x 768** Sony 1304
Basic System	2,125	2,565	2,755	3,010
WITH HARD DRIVE				
80MB - IDE	2,515	2,955	3,045	3,395
100MB - IDE	2,550	2,990	3,180	3,440
200MB, 15ms - IDE	2,865	3,305	3,495	3,745
*338MB, 16ms - ESDI	3,500	3,940	4,130	4,415

*Maxtor Drive ** ORCHID ProDesigner II - 1MB

MICRO-L 386-33/Cache $1,450

- Intel 80386-33MHz CPU, Lndmk: 58.7MHz/, MIPS: 7.99
- 4MB RAM exp. to 16MB on-board • SIS™ Chipset
- 80387 Weitek WTL 3167 co-processor socket
- AMI BIOS • 64k Cache expandable to 128k Cache
- True OS/2, XENIX, MS DOS, & Novell compatible
- 8 expansion slots (1-32, 8-16 bit)
- 1:1 interleave ESDI controller with 32k Cache or IDE
- 1.2 MB and 1.44MB FDs (Teac)
- 2 serial, 1 parallel ports
- Keytronics (USA) or Mytek (click-type) 101 keyboard
- Tower case w/7 bays/digital display w/230W P/S
- MS DOS 3.3 or 4.01 included

STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	No Video & Monitor	14" VGA 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440	HiRes VGA** 1024 x 768 Sony 1304
Basic System -	1,450	1,890	2,060	2,330
WITH HARD DRIVE				
80MB - IDE	1,840	2,280	2,450	2,720
100MB - IDE	1,875	2,315	2,485	2,755
200MB, 15ms - IDE	2,190	2,615	2,800	3,070
*338MB, 16ms - ESDI	2,860	3,300	3,470	3,740

*Maxtor Drive ** ORCHID ProDesigner II - 1MB

MICRO-L 386-25 $1,175

- 80386-25MHz CPU, Lndmk: 30.0MHz
- True OS/2, XENIX, MS DOS, & Novell compatible
- 4MB RAM expandable to 8MB
- 80387 co-processor socket
- 1.2 MB & 1.44MB FDs (Teac)
- 1:1 interleave controller or IDE
- AMI BIOS, NEAT™ Chipset
- 8 expansion slots/2 serial, 1 parallel ports
- Keytronics 101keyboard (USA) or Mytek (click-type)
- 6-drive Baby AT case with security lock, LED indicators
- 200W power supply/Tower Case add $85
- MS DOS 3.3 or 4.01 included

STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	12" Mono 720 x 350	14" VGA 640 x 480 Relisys	14" Multiscan 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	1,270	1,545	1,615	1,805
WITH HARD DRIVE				
40MB - IDE	1,475	1,750	1,820	2,010
80MB - IDE	1,660	1,935	2,005	2,195
100MB - IDE	1,695	1,970	2,040	2,230
200MB, 15ms - IDE	2,010	2,285	2,355	2,545

MICRO-L 386-SX $825

- 80386/SX-16 CPU runs 16MHz
- 80387 co-processor socket
- 2MB RAM expandable to 8MB
- 1.2 MB & 1.44 MB floppy drive (Teac)
- True OS/2, XENIX, MS DOS, and Novell compatible
- AMI BIOS, NEAT™ Chipset
- 1:1 interleave HD/FD IDE controller
- 8 expansion slots/2 serial, 1 parallel ports
- Keytronics (USA) or Mytek (click-type)101 keyboard
- 6-drive Deluxe baby-AT case with 200W Power Supply
- MS DOS 3.3 or 4.01 included
- **386/SX-20MHz add $90**

STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	12" Mono 720 x 350	14" VGA 640 x 480 Relisys	14" VGA 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	925	1,195	1,265	1,455
WITH HARD DRIVE				
40MB - IDE	1,130	1,400	1,470	1,660
80MB - IDE	1,315	1,585	1,655	1,845
100MB - IDE	1,350	1,620	1,690	1,880
200MB, 15ms - IDE	1,665	1,935	2,005	2,195

MICRO-L 286-12 $385

- 80286-12.5MHz CPU
- True OS/2, XENIX, MS DOS, and Novell compatible
- 80287 co-processor socket
- 1MB RAM expandable to 4MB
- 1.2 MB floppy drive (Teac)
- 2 HD/2 FD IDE controller
- 2 serial, 1 parallel ports
- 101 Enhanced keyboard
- 6-drive Deluxe baby-AT case with 200W power supply
- **16MHz add $45**

STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	12" Flat Mono 720 x 350	14" VGA 640 x 480 Relisys	14" VGA 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	480	740	825	1,015
WITH HARD DRIVE				
40MB - IDE	680	950	1,030	1,220
80MB - IDE	870	1,130	1,215	1,405
100MB - IDE	905	1,165	1,250	1,440
200MB , 15ms - IDE	1,220	1,480	1,565	1,755

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- 386-25 w/CPU - ECS ... $625
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- 386-SX/20 VIA ... $430
- 386-SX/16 NEAT ... $360
- 386-SX/16 VIA ... $360
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Keyboard 101
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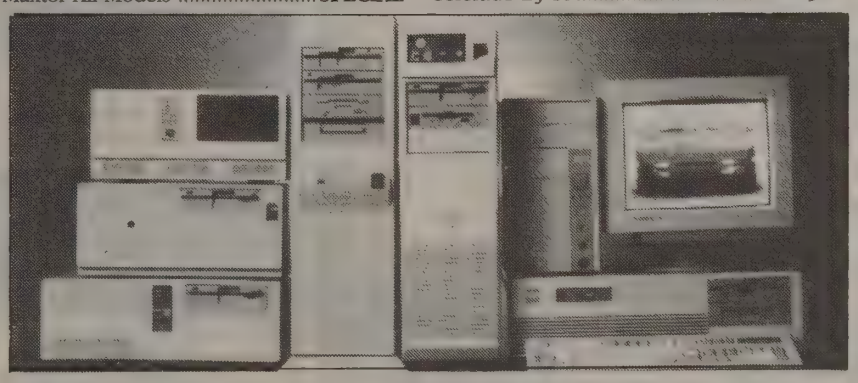

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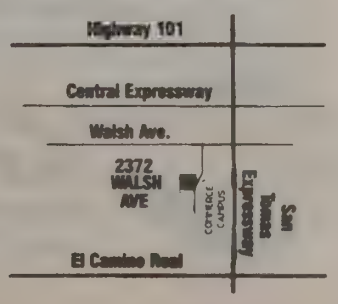

MANUFACTURER'S WAREHOUSE SALE

★NOW FOR THE SECOND TIME IN HISTORY

Guitar Showcase has joined forces with the major manufacturers in the music and sound industry to bring you INCREDIBLE SAVINGS on: •Hot new products •Manufacturers close-outs •Factory over-stocks •Sales reps samples •Super star tour gear •Distributors surplus...ALL WITH FULL FACTORY WARRANTY!

★HERE'S WHAT'S HAPPENING:

Showcase contacted our suppliers and had them send us everything they could at SUPER BLOW-OUT PRICES so that we could to pass the savings on to you!

★THIS IS NOT HYPE & JIVE!

These companies have warehouses full of products that they want to move NOW! This is the way to help them & our loyal customers at the same time. From time to time, all companies find themselves overstocked with quality products for a number of reasons which include: •New model introductions •Overseas shipping errors •Over-estimation of consumer demand •Lack of storage •Anomalies in production schedules •Labor disputes, etc. The list could go on forever! Everyone who's ever been in business knows these things happen–it's no reflection on the quality of the products or the companies involved, but it is YOUR CHANCE TO SAVE BIG BUCKS!

★THIS SALE IS TOO BIG

for a one-day, two-day, or even a week-long event. This will be going on for the ENTIRE MONTH OF MAY! Shipments will be arriving daily from all over the world! Various manufacturers will send their reps to Guitar Showcase to demo their products, answer questions, and solve technical problems. Supplies are limited and many products will be offered on a first come– first sold basis.

•EVERYTHING WITH FULL FACTORY WARRANTY!
•SAME DAY FINANCING AVAILABLE
•ALL MAJOR CREDIT CARDS ARE WELCOMED!

★SO BIG WE COULDN'T DO IT ALONE!

Guitar Showcase is your mega-music complex but even Showcase's normal $2 million musical inventory is not enough for this sale! We've called in some of the biggest manufacturers, distributors, and factory sales reps of the music industry to bring you the biggest sale in our 26 year history.

COME IN & SEE FOR YOURSELF–YOU WON'T BELIEVE IT!

★GET HUGE SAVINGS ON MAJOR BRANDS:

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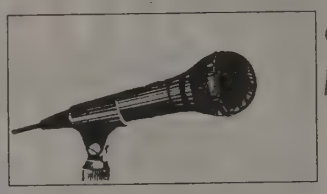

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NOW $49.95!

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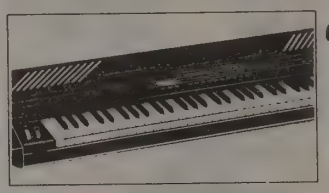
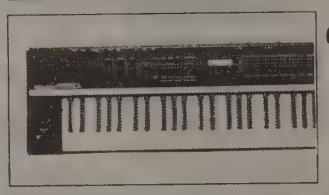


•KURZWEIL K-1200
NOW $2195!



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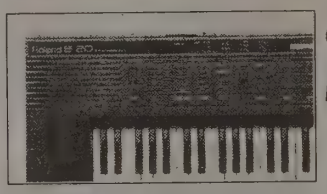
NOW $1095!



•ROLAND E-20
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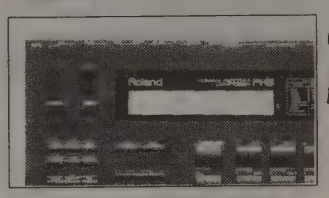
NOW $845!



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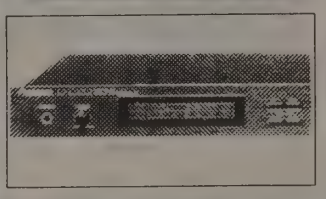

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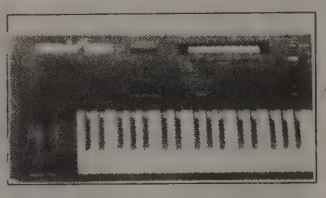

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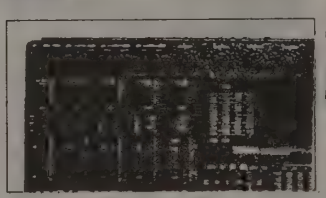

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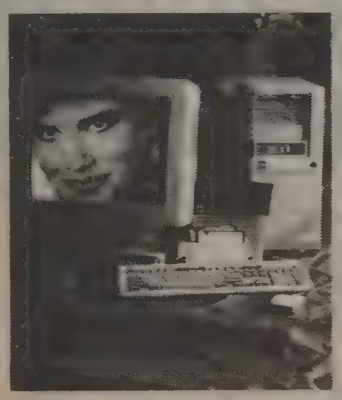

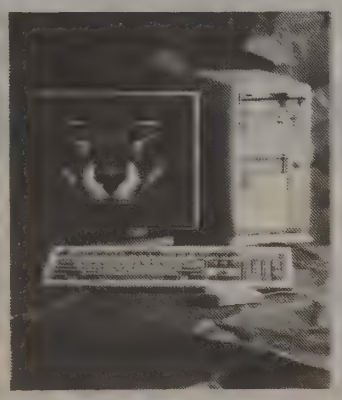

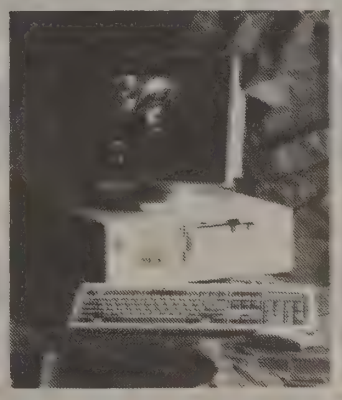

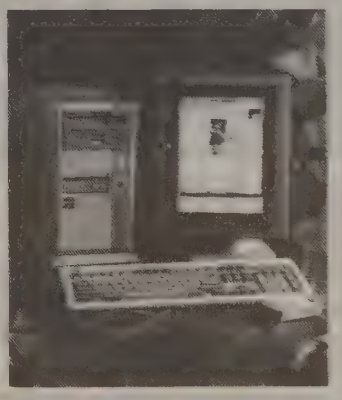

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- Enhanced 101 keyboard
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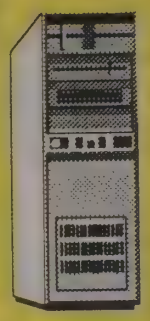

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42 MB Hard Drive Color VGA System

- 1 MB RAM
- 42 MB Hard Disk, 28ms
- VGA Color Monitor 640x480
- VGA Card
- Minitower case w/200W
- 1.2 or 1.44 Floppy Drive
- 2 Serial, 1 Parallel, 1 Game Ports
- 101 Enhanced Keyboard

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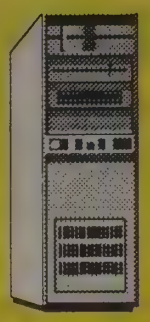

ORCHID 386SX-16
42 MB Hard Drive Color VGA System

- 1 MB RAM
- 42 MB Hard Disk, 28ms
- VGA Color Monitor 640x480
- VGA Card
- Minitower case w/200W
- 1.2 or 1.44 Floppy Drive
- 2 Serial, 1 Parallel, 1 Game Ports
- 101 Enhanced Keyboard

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40 MB HARD DISK, 28ms $175	200 MB, 16ms $685	Super VGA 256K Card	Pixel VGA 1MB Card
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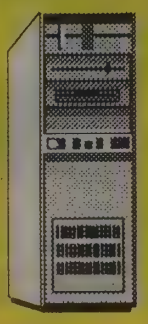

- 1 MB expandable to 8 MB
- Minitower/Desktop Case
- IDE Hard Drive Controller
- 2 Serial/1 Parallel
- 1.2 or 1.44 Floppy Drive

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SAME CONFIGURATION AS ABOVE

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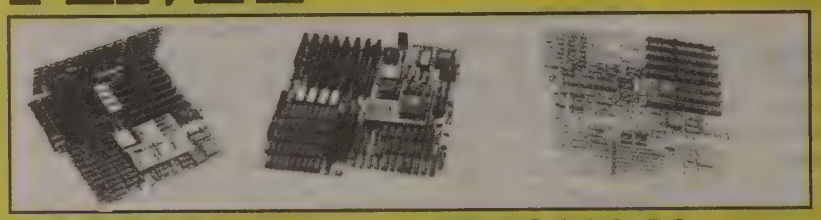
MICRONICS 486-25/33	SPECIAL

AMI High Performance Motherboards



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AMI motherboards are extremely reliable and are designed to perform in any condition. They are tested at 130°F and feature a one year limited warranty.

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To improve reliability and minimize noise we use 8 layer PC board construction. Not the common 4 or 6 layer you see elsewhere. One look shows.

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The Ultimate Notebook Machine

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- NiCad battery and charger included

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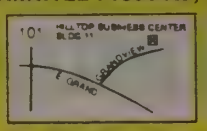

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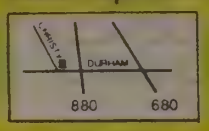

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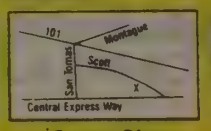

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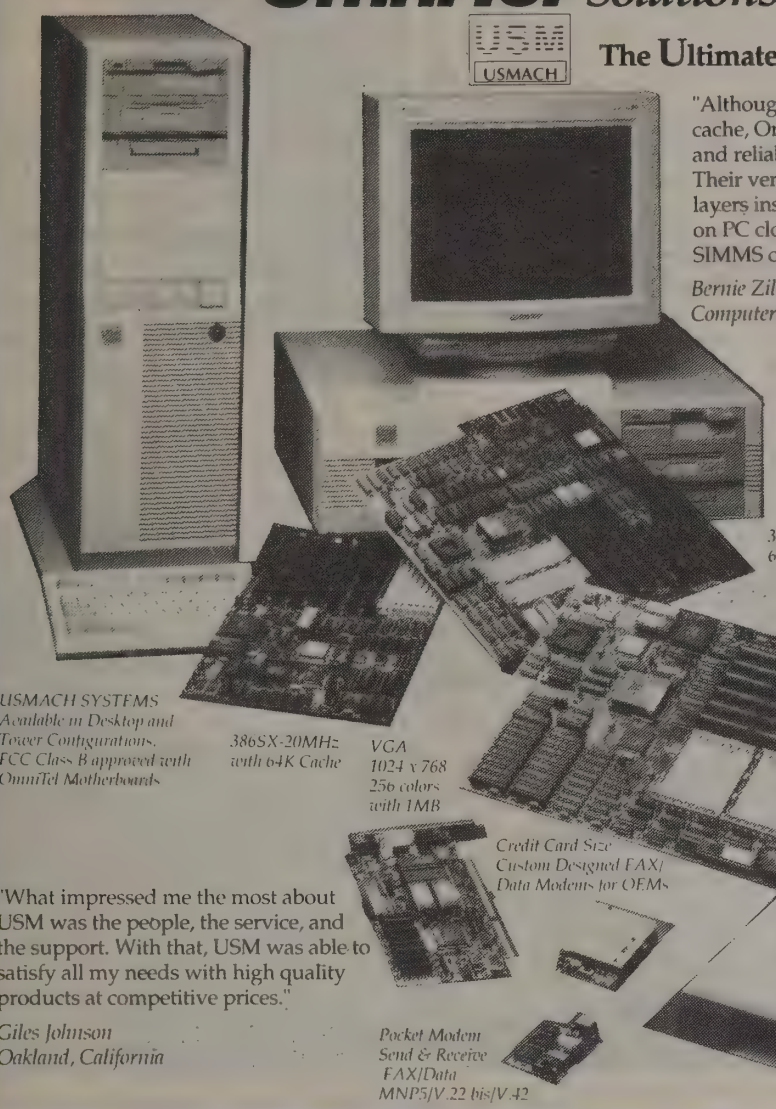

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The Ultimate Systems Machine

"Although it features extremely fast cache, OmniTel's focus is on quality and reliability rather than speed. Their very clean board has eight layers instead of the six often found on PC clones, and a full 32MB of SIMMS can fit on the board."

Bernie Zilbergeld
Computer Currents

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386-33MHz Motherboard 64K Cache

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USMACH SYSTEMS Available in Desktop and Tower Configurations. FCC Class B approved with OmniTel Motherboards

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Oakland, California

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Modems Internal/External Send & Receive FAX/Data V.32/V.22 bis/MNP5/V.42

Standard Configuration:
- 4MB RAM, 70ns (2MB for SX)
- 1.2MB Floppy Drive
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- 2 Serial, 1 Parallel, 1 Game Port
- Northgate Omnikey 101 Keyboard
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- Desktop Case
- 2 Year Motherboard Warranty

See Specials for Hard Disk/Video Options

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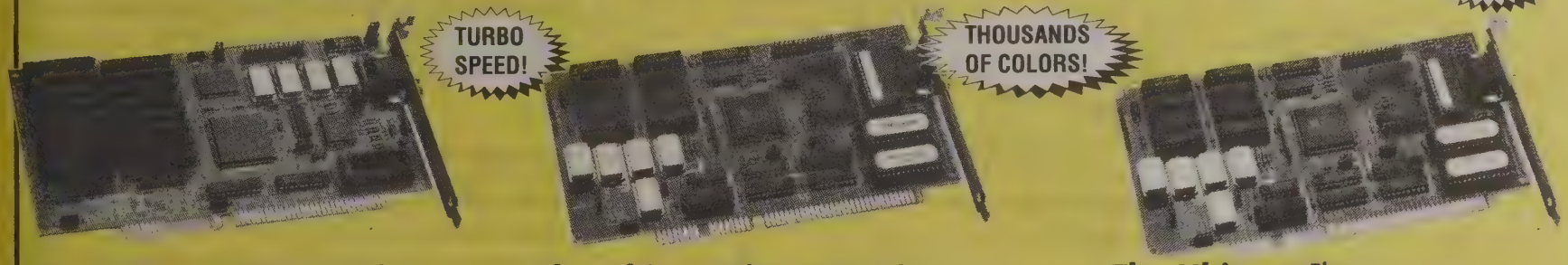

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Lowest chip count, Fastest VGA available

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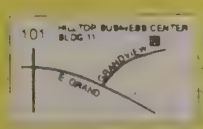

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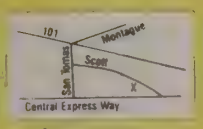

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Cash prices reflected.
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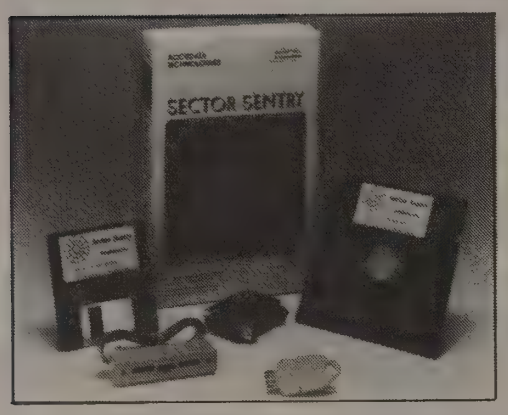
tion. ($99.96) International Microcomputer Software, Inc., 1938 Fourth St., San Rafael, CA 94901. (415)454-8901.

PLUG-IN PROTECTION WITH SECTOR SENTRY

A new system by Accudata Technologies uses a combination of external hardware and software to provide memory-resident security and virus protection for the IBM PC and compatibles. To prevent virus damage, Sector Sentry inspects critical components of DOS-based systems, as well as CMOS setup parameters and BIOS. Physical security is provided by a hardware key, the Sentry Key, an electronic maze that encrypts information about the computer and passes it back to the computer in un-encrypted form when given the proper query. For the computer to operate, the key must be inserted into the Sentry KeyRing, a device that connects to the system's parallel port adapter. ($129.95) Accudata Technologies, Inc., 20102 W. Bluemound Rd., Bldg. 105, Suite 304, Waukesha, WI 53186. (414)785-8002.



GAMES REVIEWS

By Mike Markowitz

KID PIX

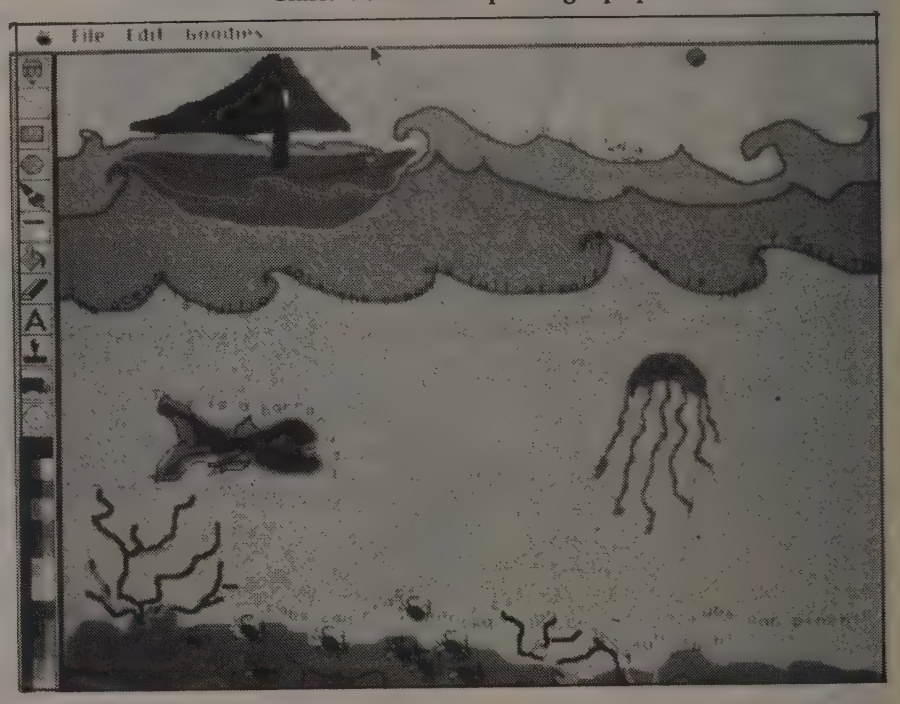
Designed By: Craig Hickman
Published By: Brøderbund (1991)
For: Macintosh (1MB for monochrome, 2MB for color, supports sound recording on a Mac LC, IIsi or any system with a Farallon MacRecorder; supports color output to ImageWriter II and HP PaintJet)
List Price: $49.95

Anyone who has ever seen the delight that most kids experience in their first encounter with a good computer paint program can understand that one real creative tool has more entertainment value than a dozen video games. Kid Pix represents a rethinking of the standard bit-map painting tools from the viewpoint of today's kids—whose visual expectations have been shaped by thousands of hours of professional video special effects.

The program is as easy to learn and use as MacPaint, but packed with special effects and hidden surprises. A "Small Kids Mode" hides the menu bar, so that the littlest users can avoid the risks and frustrations of making accidental or random menu selections.

The application code (about 700K) fits on a single disk. A second disk contains digitized sound files, including the alphabet and numbers in English and Spanish. If you have a Mac LC or IIsi you can attach your own recorded sounds to a picture. The program senses what kind of Mac you have, and a dialog box prompts you to switch to 256-color mode if you have the Control Panel set to something else.

Nifty features of Kid Pix include the Wacky Brush, which offers a palette of twenty-eight different effects, including a stunning rainbow brush and an amazing fractal tree generator. The Electric Mixer tool offers fourteen global effects, like Zoom, Checkerboard, and Broken Glass. "Rubber Stamp" brings up a palette of little icons to



paste into your drawing—many of them are colorized symbols from the Cairo picture font, familiar to veteran Mac users.

Only one level of Undo is provided—a reasonable compromise to fit the program into 1MB.

The package includes a forty-four-page manual and a set of stickers to adorn your artwork. School editions and lab packs are also available. Kid Pix would be an excellent choice for any family or school with a new Mac LC.

VETTE!

Designed By: Dan Geisler and Gilman Louie
Published By: Spectrum Holobyte (1991)
For: Macintosh (1MB for monochrome, 2MB for color)
List price: $59.95

Vette! is a fantasy simulation of street racing through the streets of San Francisco. It is a fantasy because any San Franciscan who could afford a Corvette knows that General Motors products are junk, and already owns a Porsche.

ROBOSPORT

Designed By: Edward Kilham
Published By: MAXIS
For: Macintosh (1MB for monochrome, 2MB for color, supports multi-computer, multi-player option over AppleTalk or serial cable).
List Price: $59.95

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Continued

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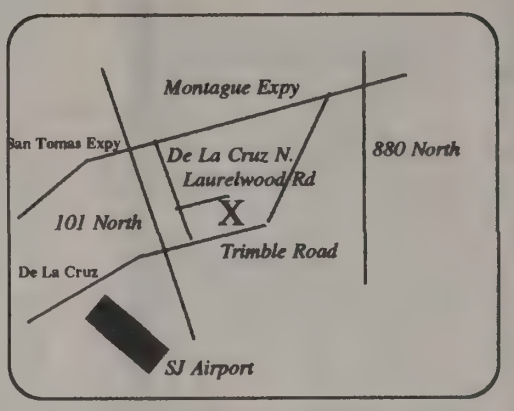

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PRODUCT SPOTLIGHT

RoboSport, from those wonderful folks who brought us SimCity, is based on the idea of a future world in which the human need for destructive violence is satisfied by gladiatorial combats between teams of robots.

A ninety-page illustrated manual includes a detailed tutorial that explains how to "program" the movement, scanning, and firing of your mechanical warriors. There are options

for non-violent games like Treasure Hunt and Baseball, as well as Capture the Flag and Hostage Rescue. A quick reference card tabulates data on robot performance, battle formations, and scoring.

You can play against the computer, or against one or more human opponents. Players at two different computers can be linked over an AppleTalk network, by serial cable, or by modem.

The color version of the game takes 1503K of disk space when installed. The painless copy protection scheme is based on sets of little coded symbols scattered through the manual.

The game teaches sound principles of house-to-house combat and small unit tactics. The graphics and sound effects are excellent, and the opening credits are a multimedia *tour-de-force.*

RoboSport is a convincing proof that games on the Macintosh can be great entertainment and great Macintosh applications. With color Mac systems becoming more affordable, it should be a successful product.

STUPID PC TRICKS

Designed By: Bob LeVitus and Ed Tittel
Published By: Addison-Wesley
For: IBM PC and compatibles (some programs require EGA or VGA graphics)
List Price: $19.95

Stupid Mac Tricks, published last year, was a collection of amusing, delightful, or malicious little public-domain and shareware programs packaged with a paperback book. Stupid PC Tricks repeats this proven formula, with a collection of seventeen programs compressed onto two 360K disks. An automated installer makes it easy for beginners to unpack this bag of tricks.

Four of the programs make noise or play music; five of the programs generate pretty pictures, and five others are practical jokes that make rude remarks at the DOS prompt, do bogus virus checks, etc. Particularly excellent is Recursive Realm, which displays fractal geometry.

Some of the tricks are normal applications, others are TSR (terminate-and-stay-resident) programs, a few work both ways.

Stupid PC Tricks is a good introduction to the lighter side of hobbyist-hacking for PC users who do not belong to an online service or who lack the time to download and sort through the vast and growing collections of this stuff.

PC HARDWARE REVIEW

TRAVELER SENDFAX MODEM

Manufactured By: Best Data Products
List Price: $199
Reviewed By: Woody Liswood

Whether this is called The Smart One 482P, as the documentation claims, or The Traveler, as it says on the box, this is a battery or line-powered 2400 baud portable Hayes "AT" command set modem and a Sierra Sendfax Chip set fax device, packaged with Quick Link II (QLII), a combination modem and fax software package.

One nice thing about the modem is that it doesn't drain power from the battery until it senses a signal from the computer that tells it to receive data. You can leave it plugged into the COM port without draining significant battery power. According to the documentation, the Traveler will operate for approximately eight hours on the 9V battery. However, with intermixed use of the fax and modem, my batteries only lasted about six hours.

I found no problems with the modem or the fax working with QLII. However, I ran into a sporadic problem with the modem under Windows running Crosstalk for Windows. The first connection would go smoothly.

Continued

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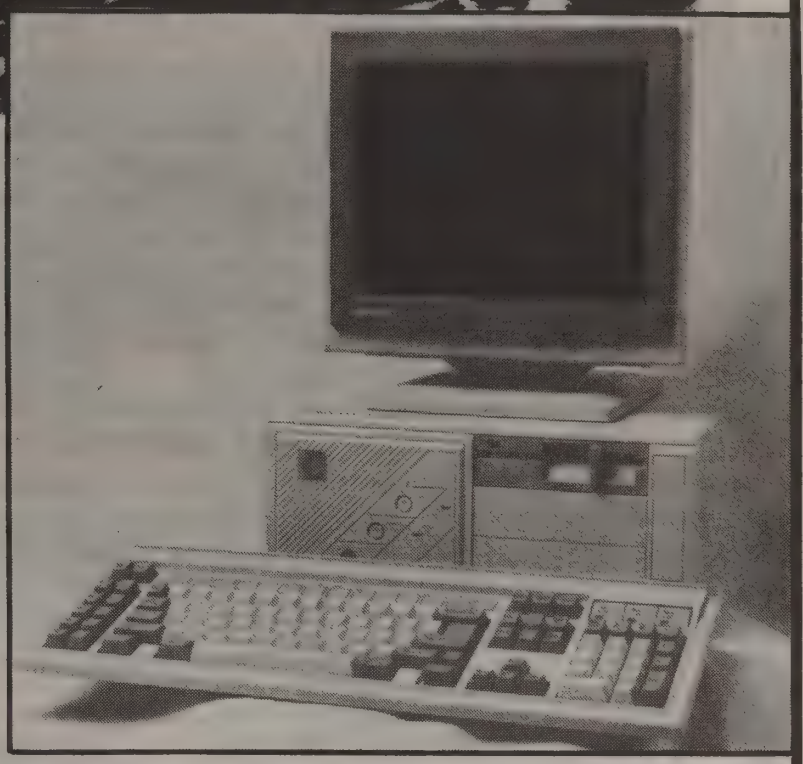

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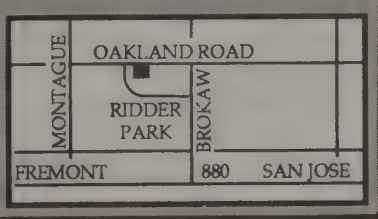

However, when dialing a second BBS, I would get a modem error message and no connection. When I tried a reconnect everything worked. It didn't occur all the time, but it did happen frequently. To be fair, I also had the same problem with a WorldPort 2400 baud portable fax modem. I did not have this problem with Procomm or QLII.

It seems that Best did not write and is not responsible for the accompanying manual. Unusual, to say the least. In the documentation there is a little notice that you should send the registration form at the back of the documentation for QLII to Smith Micro Software.

Unlike many of the other fax boards on the marketplace, you do not need to load a device driver to run the fax. The fax and modem communication capabilities are well integrated in QLII. The communications portion of the program is weaker than I would have preferred, but perfectly workable. Mouse support is built into the interface and worked seamlessly.

QLII emulates a small variety of terminals: TTY, VT102, VT100, VT52 and ANSI. It does not support CIS VIDTEXT, which it should, since it has a predefined log-on dialog box for CompuServe.

QLII includes a small but effective script language. Unfortunatley, it is hidden in the documentation and there are no examples of completed scripts. There are two small scripts on the disk. A quick look at these two scripts will, if you are already familiar with scripting from other modem programs, allow you to write scripts.

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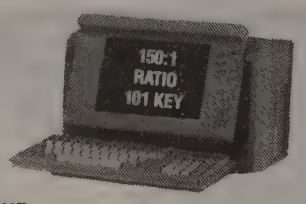

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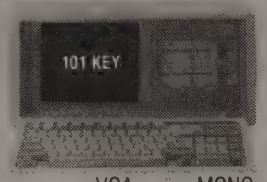

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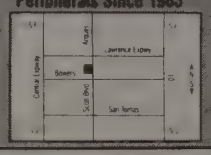

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master charge VISA

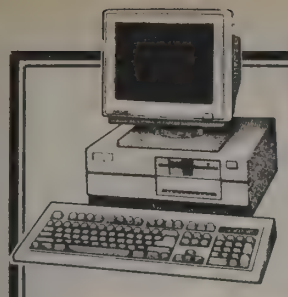
The fax portion of the program is contained within one pull down menu and does everything you will need to develop and send your faxes.

The QLII menu structure is of the pull-down type and provides a number of dialog boxes for setting system defaults such as baud rates, parity, and terminal types. Nothing unusual or out of the ordinary in most of these boxes. However, there are three built-in dialog box sessions: CompuServe, Genie, and Dow Jones. These cannot be disabled, changed, or even expanded. For example, I check CompuServe, the WELL, and MCI everyday. Too bad for me, CIS is easy but for the others, I must write a script if I want automatic log-ons.

There is an editor menu selection which provides access to a four hundred-line screen and text editor buffer. You could create script files here, or you can create fax messages and send them through the fax section of the program. However, if you are using this section as a save buffer, you only get to save two hundred lines of text as they are received. Most programs today set a memory size to the buffer rather than a line size.

The fax portion of the program is contained within one pull down menu and does everything you will need to develop and send your faxes. When you are ready to send a fax,

Continued



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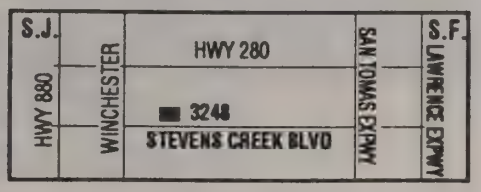

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DTK NEWS

(Paid Advertisement)

DTK GROWTH SPURS MOVE TO LARGER USA-HQ OFFICE

Strong sales growth has caused value-leader DTK Computer Inc. to move its headquarters into larger facilities for the second time in four years.

DTK's U.S. headquarters operations moved March 30th to new facilities in the City of Industry at 17700 Castleton Street, according to Thomas F. Bayens, Director of Marketing. The new offices are more than double the previous size.

Western Regional headquarters plans to move to a different location nearby when construction is completed in a few weeks. Regional headquarters serves the states of California, Oregon, Washington, Nevada, Idaho, Montana, Arizona, and Wyoming, Utah, and Western Canada.

DTK ADDS R&D FUNCTION TO SAN JOSE OFFICE

DTK Computer Inc. will soon add an R&D (Research and Development) function to its Northern California office in San Jose, according to Rany H.T. Hsieh, Vice President and General Manager.

"We want to work closely with our major suppliers, and many of them are in the Silicon Valley," said Hsieh.

Founded in 1981, DTK is one of the world's largest independent manufacturers of motherboards and add-on cards. More than 100 engineers and technicians are involved in the company's R&D operations.

DTK manufactures and markets a full line of Industry Standard Architecture (ISA) microcomputers, motherboards, and add-on cards, selling its products through independent distributors and resellers.

HOT-TO-TROT!

DTK 386SX/20MHz

Model PEER-2030 Bare Bone System

✔ *MAINBOARD*	DTK PPM-2030C
✔ *MICROPROCESSOR*	Intel 80386SX - 20MHz
✔ *COPROCESSOR*	80387SX
✔ *CLOCK SPEEDS*	20 & 10 MHz switchable
✔ *RAM CONFIGURATION*	DIP:44256 x 8 + 41256 x 4 SIMM: 4 pcs.
✔ *RAM ON BOARD*	512K / 1 / 1.5 / 2 / 3 / 4 / 5MB
✔ *ROM SYSTEM*	27256 X 2; Shadow RAM supported.
✔ *EXPANSION SLOTS*	8 (16-bit x 6; 8 bit x 2)
✔ *DRIVE BAYS*	5 (5.25" x 3 + 3.5" x 2) All open.
✔ *FCC Certification*	Class B
✔ *PERFORMANCE:*	**Landmark** 26.7 / **Norton SI** 22.0 / **MIPS** 3.325

In the first ***PC Magazine Service & Reliability Survey,*** **DTK users** rated us high in all four areas (*Reliability, Buy Again, Tech Support, Repair Service*). You can put DTK's reliability to *work* for *you!*

PC MAGAZINE

WORK HORSE!

DTK 386/25 MHz non-Cache

Model KEEN-2530 Bare Bone System

✔ *MAINBOARD*	DTK PEM-2530
✔ *MICROPROCESSOR*	Intel 80386DX - 25 MHz
✔ *COPROCESSOR*	Intel 80387/Weitek 3167
✔ *CLOCK SPEEDS*	25 & 8 MHz
✔ *RAM CONFIGURATION*	SIP - 4 pcs.
✔ *RAM ON BOARD*	1 / 2 / 4 / 8MB
✔ *TOTAL SYSTEM RAM*	Up to 16MB
✔ *ROM ARCHITECTURE*	Shadow RAM supported
✔ *EXPANSION SLOTS*	8 (32-bit x 1; 16-bit x 5; 8-bit x 2)
✔ *DRIVE BAYS*	5 (3 x 5.25" + 2 x 3.5")
✔ *PERFORMANCE:*	**Landmark** 31.7 / **Norton SI** 27.1 / **MIPS** 4.35
✔ *FCC CERTIFICATION*	Class B

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DTK users rated the company more favorably than users of ALR, AT&T, Epson, Everex, and IBM rated their manufacturers.

USERS RATE DTK HIGH IN *PC MAGAZINE* POLL

Users of DTK Computers rate its products higher in terms of service and reliability than many well-known brands.

Nearly 18,000 *PC Magazine* readers completed questionnaire evaluations in four categories with responses geared to the computer the respondent uses regularly.

Users of DTK units rated their computers as average or above in all four categories surveyed, the only company earning the distinction.

In Reliability, DTK was ranked higher than ALR and Packard-Bell. In the Technical Support area, DTK outperformed ALR, Acer, AST, AT&T, Compaq, and IBM.

The results were similar for Repair Service, with DTK leading ALR, Acer, AST, Compaq, Kaypro, Tandy, and IBM.

The fourth category involved buying the same brand again. DTK users rated the company more favorably than users of ALR, AT&T, Epson, Everex, and IBM rated their manufacturers.

More than 400 brands were mentioned by readers with at least 75 mentions necessary for inclusion. Only 27 of the brands qualified for inclusion in the survey results.

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- IDE HD/FD controller
- 1.2 MB 5.25" Floppy Drive
- Super VGA Color Monitor (800 x 600: 28 dot pitch)
- 2 Serial, 1 Parallel port
- DTK 101 Enhanced Keyboard

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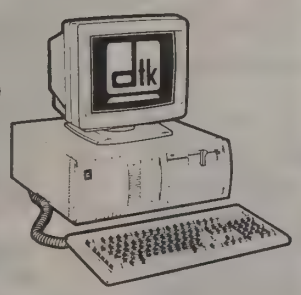

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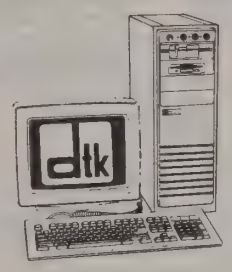
DTK KEEN 3400

- Intel 80386-33 MHz processor
- 64K Cache RAM
- 4 MB RAM
- Quantum 80 MB Hard Drive
- 1.2 MB 5.25" Floppy Drive
- Hi-resolution Amber monitor
- Hercules-compatible MGP
- DTK 101 Enhanced Keyboard



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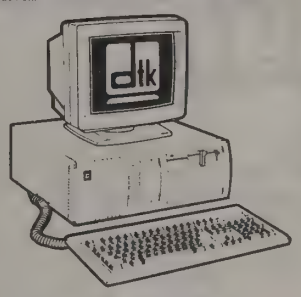
- Lotus Works



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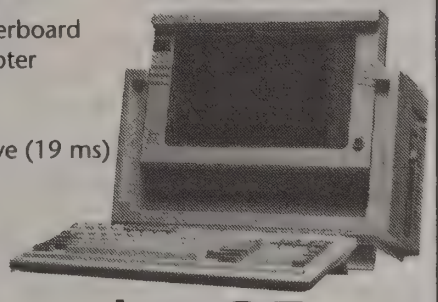
- 1.44 MB 3.5" Floppy Drive
- 1 Serial,1 Parallel port
- Detachable Keyboard



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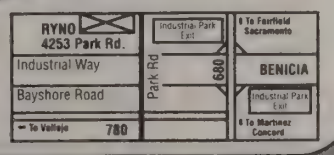

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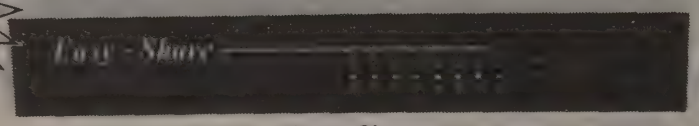

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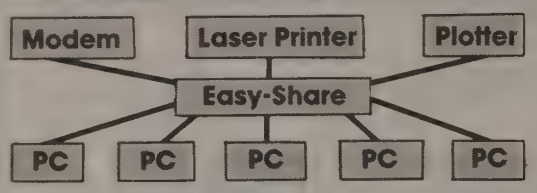

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you can select faxes that have been already converted by QLII to QFX, which appears to be its proprietary format, or you can select ASCII, TIFF, PCX or MacPaint files. *Humm*, MacPaint on a PC?

There is a mini text editor built into the fax program. However, the cover page works a bit strange. When you enter your message, it goes into a box and the text then scrolls off the left of the screen. After some investigation, I discovered that I could enter up to 255 characters on that line. They faxed correctly, and appeared on the received fax as a small paragraph centered under the heading of the cover page, but you never saw them on the screen. Strange, to say the least.

The fax and modem communication capabilities are well integrated in QLII, the accompaning software package.

If you fax more than text files, you can create your documents using an Epson MX-80 with a Graftrax printer driver. Then print it to disk, or use an enclosed capture program to catch that document as it heads to the printer and keep it as a disk file.

QLII also creates a fax log as it works away. Checking the log will tell you the receiver of the fax, the destination phone number for that fax, the time and date of the fax, as well as the time duration it took to send the fax. A nice feature if you charge clients for telephone time for phone calls and faxes.

The Traveler Sendfax Modem works, and works well. QLII, the enclosed communications software, works, and is a reasonable choice if you are new to telecommunications and faxing. It does have a variety of idiosyncrasies and anomalies when compared to more robust and less low-end programs. If you don't run Windows, keep QLII around for the fax part of the program. However, I recommend switching to a better communication program, such as Procomm or Crosstalk under DOS, Crosstalk for Windows, or WinFax under Windows 3.0.

Five Stars for the Traveler SendFax Modem. One Star for QLII. (Best Data Products, Inc., 9304 Deering Ave., Chatsworth, CA 91311. 818/773-9600. Smith Micro Software, Inc., PO Box 7137, Huntington Beach, CA 92615)

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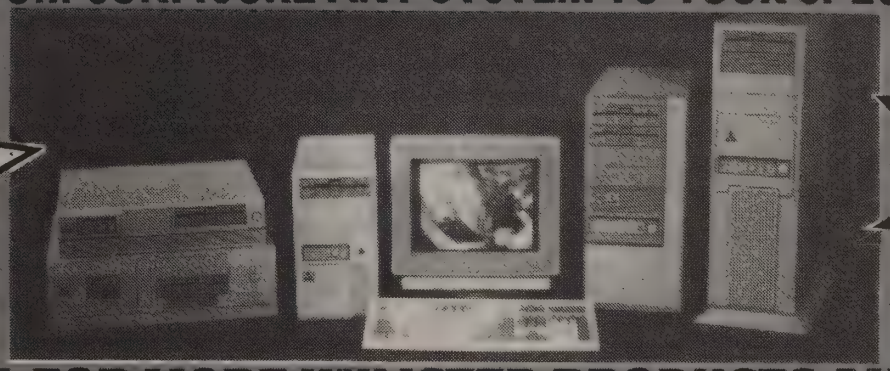

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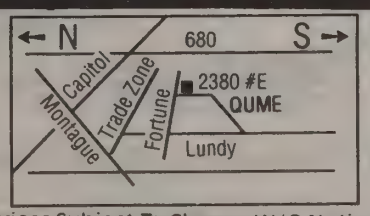

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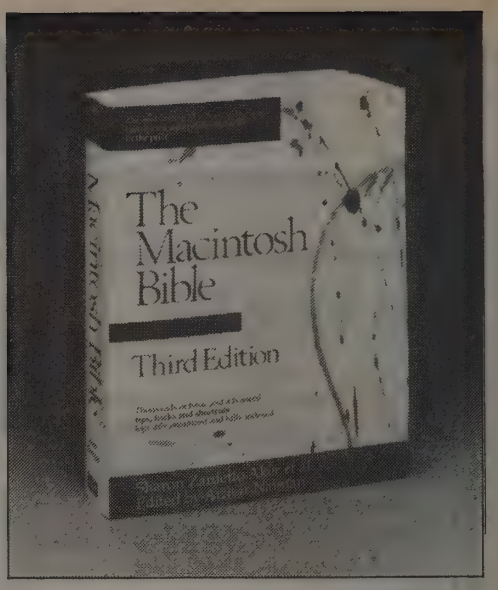
BOOK REVIEW

THE MACINTOSH BIBLE 3RD EDITION

THE MACINTOSH BIBLE "WHAT DO I DO NOW?" BOOK

THE MACINTOSH BIBLE SOFTWARE DISKS 3RD EDITION

Published By: Goldstein & Blair
List Price: $28, $12, $20 respectively, or $48 packaged together
Reviewed By: Matthew Leeds



Learning to use a computer is like moving to a foreign country. Everyone speaks a foreign language, the customs are different, it's easy to make false assumptions based on prior experience, and there is always more to learn. Just as travelers tend to carry guide books, *The Macintosh Bible* and its companion, *What Do I Do Now?*, serve as excellent resources for both novices and those on their way to becoming experts.

The Macintosh Bible is subtitled, "thousands of tips, tricks and shortcuts, logically organized and fully indexed." That about sums it up. It's an excellent compendium of other's experience laid out in an accessible fashion. The bulk of the material is timeless and useful.

What Do I Do Now? covers most of the error messages that show up on the Mac's screen. Each error message is shown as it occurs, an explanation of what could have caused the error is given, and some possible solutions to the problem are discussed. There is also some material on how the Mac works, how to prevent problems from occurring, and ways to repair damage should it happen.

The Software Disks package contains two disks of shareware, software that you try out first and then pay for on the honor system. The programs in the collection are some of the more popular ones in any shareware collection and could be found on bulletin boards or in a user group library. If you don't have access to these sources, then they might be worth the price. If there is a local user group near you, I'd suggest putting the money toward a membership instead. However, all three of these products have a thirty-day money back guarantee. I do recommend both the *Bible* and the troubleshooting guide. (Goldstein & Blair, Inc., PO Box 7635, Berkeley, CA 94707)

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Continued on page 194

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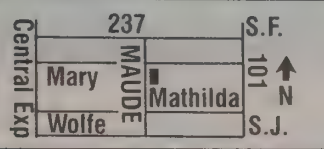

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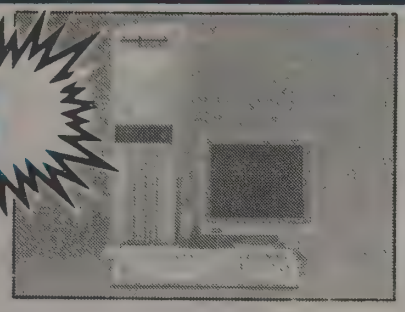

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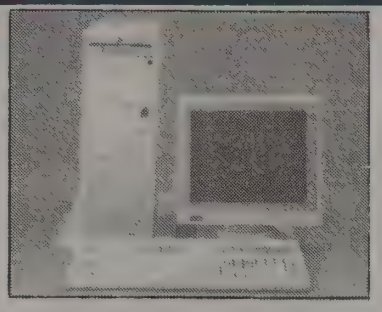

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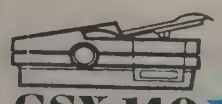

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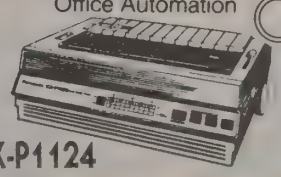

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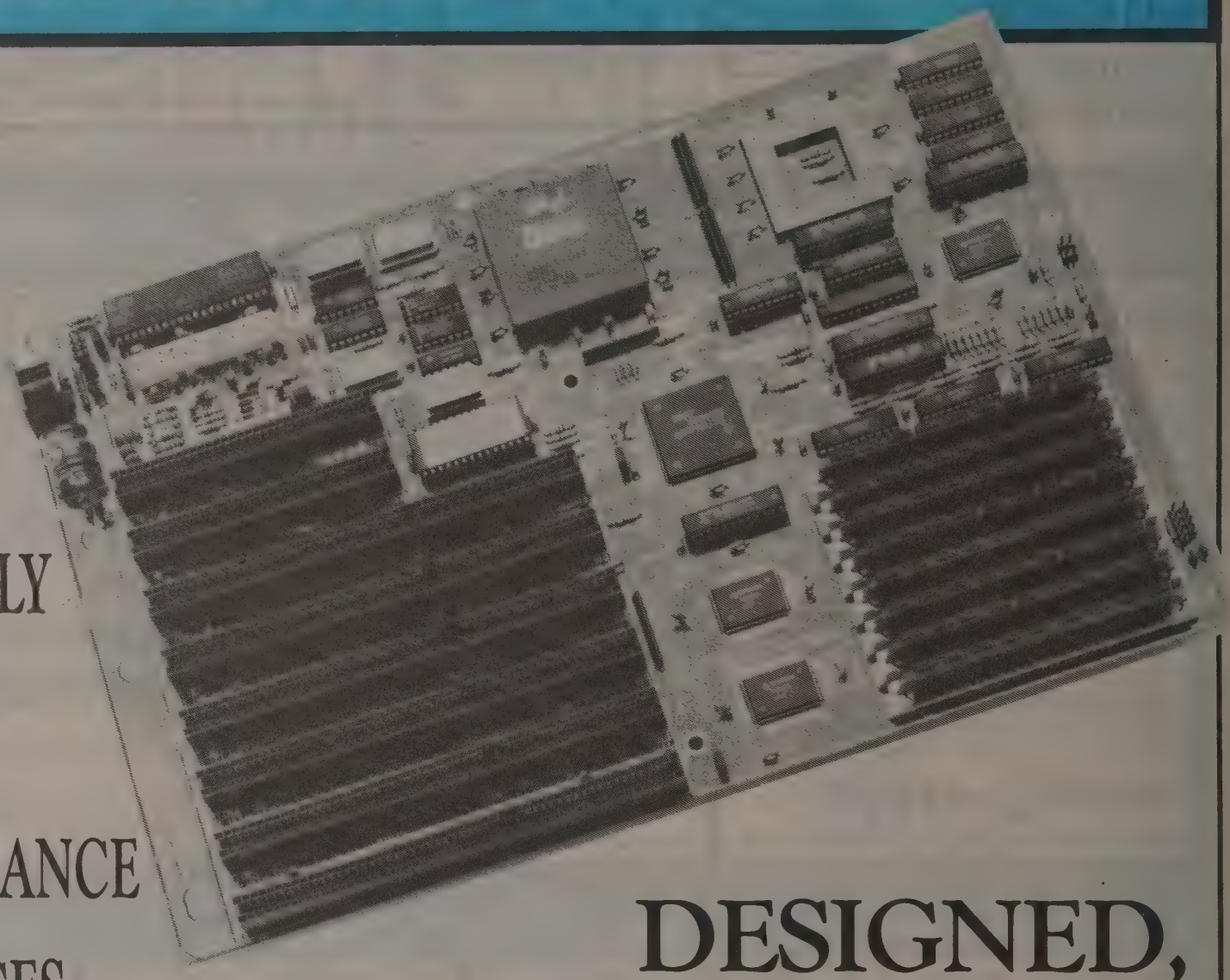

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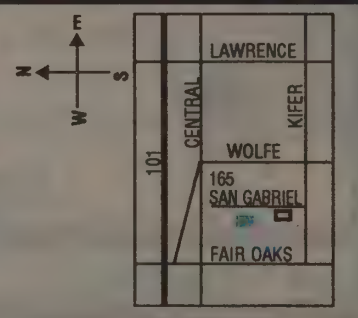

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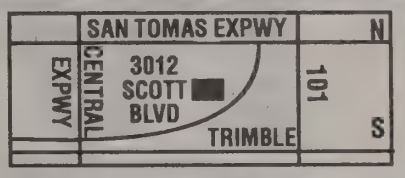

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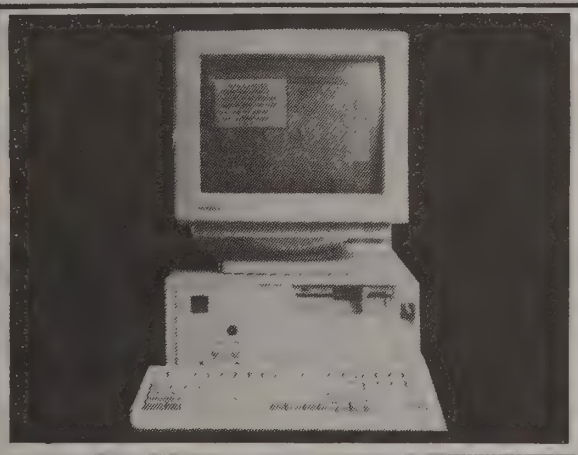

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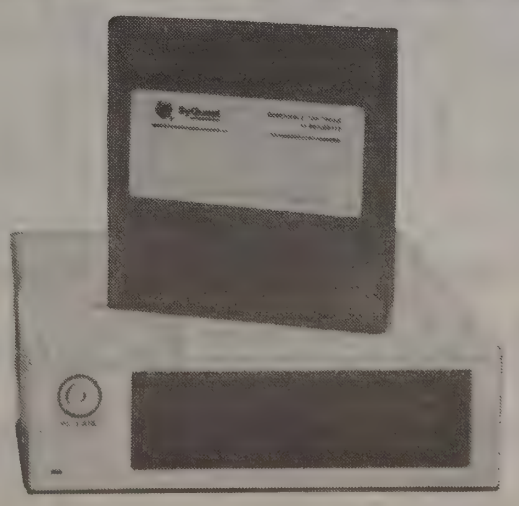

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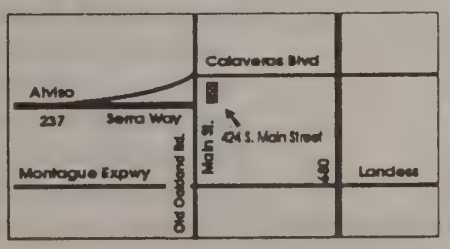

PRODUCT SPOTLIGHT

Continued from page 188

WinGrab grabs name and address information from an active Windows program and immediately prepares the envelope for you. It is shareware that can be downloaded from CompuServe, or order it from ZPAY Payroll Systems. It is well worth the money.

When you go to install WinGrab, the files are all packed on the disk, so you must use the install program to unpack them. You get an option to install Grab and LaserLabel, WinGrab only, Grab only, or LaserLabel only. Since ZPAY sent me the entire Grab Plus package for this review of WinGrab, I can comment that it too works well, has been around for a long time, and handles DOS-based programs with élan.

The most difficult part of the program is how to instruct PostScript to print where the envelope will come through the printer. For example, on a TI MicroLaser the envelope feeds from the far left of the printer. On my HPLJII and Canon it feeds from the center. After some quick experimenting, I found that I only had to change one configuration switch to make everything run smoothly.

Within the menu structure of WinGrab, you can set both a primary and a secondary return address as well as select printers and create special comments you might want, such as CONFIDENTIAL.

All in all, WinGrab is a functional program, works well under Windows, and allows you to grab and print an envelope while working on a document with your favorite word processor without having to open a special envelope document and cut and paste to it. (ZPAY Payroll Systems, Inc., 2526 69th Ave. S., St. Petersburgh, FL 33712-5631. 813/866-8233)

MACINTOSH HARDWARE REVIEW

WACOM PRESSURE-SENSITIVE DIGITIZING TABLET (MODEL SD-510C)

Manufactured By: Wacom, Inc.
List Price: $695 with stylus
Reviewed By: Matthew Leeds

Remember drawing with a pencil? The harder you pressed the pencil onto the paper, the darker it drew the line. You could easily vary both the width and the darkness of your stroke. Try doing that with a mouse. Artists who have moved from traditional media to the computer miss that level of control. Now they can get it back with a new cordless, pressure-sensitive digitizing pad from Wacom.

The pad I tested has a sensitive area of 6" x 9". The pad works with a stylus that resembles the size and weight of a pen. It contains no batteries or cords, and there are no buttons or switches on the barrel. The tip is pressure sensitive. The pad alternately sends out and receives electromagnetic signals. These signals cause a resonance in a coil-capacitance circuit in the pen that the pad can receive. Pressure on the tip of the pen moves a ferrite core inside the pen, changing the frequency of the signal returned by the pen. The pad can sense up to sixty different levels of pressure applied from the pen.

The pad connects to the Mac's modem port. I used a switch box to let me select between my modem or the Wacom tablet. I found that even with this setup I had to disable the Wacom driver from the Control Panel to use my modem. A hot key to do this would be a nice touch. The driver panel lets you set the stylus type (Wacom also supplies a four-button cordless cursor and two-switch cordless stylus), the tablet type (they make a variety of tablets), the scaling of the tablet (aspect ratio, screen area, tablet area), and whether the driver is on or off.

The tablet's pressure sensitive capabilities are used by several programs including Photoshop, Studio 32, UltraPaint, Oasis, Digital Darkroom, SuperPaint, PixelPaint, and ColorStudio. (Wacom, Inc., W. 115 Century Rd., Paramus, NJ 07652. 201/265-4226)

MACINTOSH SOFTWARE REVIEW

BACKGROUNDS FOR MULTIMEDIA

Published By: Artbeats
List Price: $289
Reviewed By: Matthew Leeds

Artists and illustrators working with traditional media have long had a plethora of resources for clip art and backgrounds. Computer clip art, generally aimed at duplicating traditional clip art, offers desktop publishers suitable imagery but ignores the needs of multimedia users. A new generation of clip art, created via scanners and image processing and delivered on CD-ROM, is expanding the definition of clip art.

Backgrounds for Multimedia is a collection of forty high-resolution illustrations, with matching buttons, bands, and mortices. They are provided in a variety of resolutions and sizes including: 8- and 24-bit, color and gray scale, 640 x 480 for full screen, and 1875 x 1405 for slides. The 24-bit images are anti-aliased for use in video applications. All of the images are stored as PICT files.

The package includes a full-color sample chart that shows each background, its file size or sizes, and the shapes of the buttons and mortices. A separate card diagrams the path through folders to each file showing the logical grouping used. The manual includes an excellent discussion of palette usage and offers tips on working with Photoshop, Director, Persuasion, PowerPoint, More, StrataVISION 3D, and Swivel 3D Professional.

The backgrounds provided include several varieties of granite, stucco, metallic, tile, as well as textures and patterns. They would work well as texture maps in 3D programs, backgrounds for text screens, and the included buttons and mortices would work well in designing interactive presentations. (Artbeats, Inc., PO Box 20083, 3880 N. El Camino Dr., San Bernardino, CA 92404. 714/881-1200) ■

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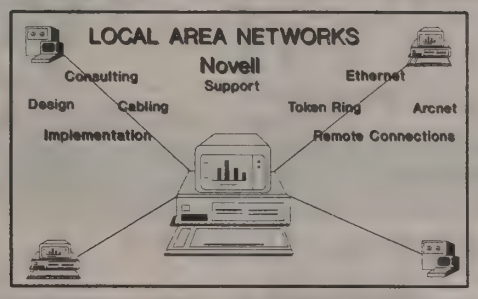

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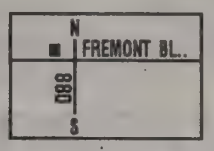

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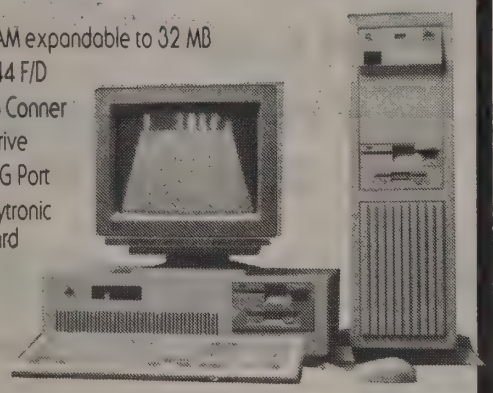

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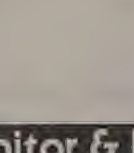

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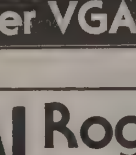

LANDMARK = 43
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- Socket 80387 & AMI BIOS
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MONTHLY SPECIAL 386-25 MHz

LANDMARK = 33
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- Socket 80387 & AMI BIOS
- 1X32 Bit, 5X16 Bit, 2X8 Bit Slots
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LANDMARK = 21
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LANDMARK = 21
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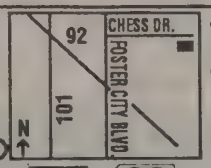

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Basic System comes with:

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All based on Chips & Technology "Chipset." See features on the right side of this page.

Tips from Z-Technology!

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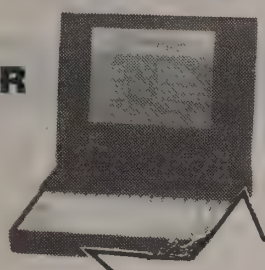

- 386SX CPU
- 2 MB Memory Exp to 4 MB
- 20 MB Hard Disk, 40 MB Optional
- 3.5″ 1.44 MB FDD
- Serial/Parallel/VGA Port
- VGA Backlit Screen 640x480
- AC/DC Adapter & Fast Charger
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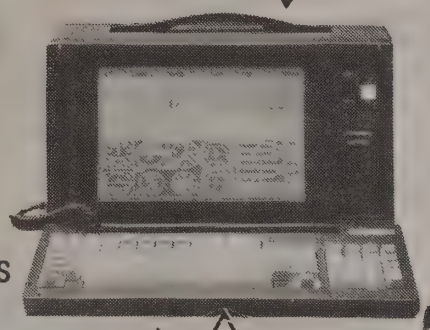

- 640 x 480 Supertwist LCD Screen w/Built-in Backlight
- Run VGA/EGA/CGA/MGA Mode
- 200 Watt 110/220 Auto Switch P/S
- Detachable 89-Key Keyboard
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- Six Expansion Slots
- Weight: 16 lbs.
- Dimensions: 16 (W) x 9 (H) x (D)
- CALL FOR CGA or EGA SCREENS

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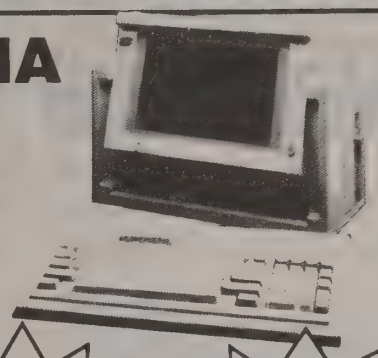

- High Resolution Gas Plasma Display
- 640 x 400 Pixel Graphics Display CGA/VGA
- 80 Characters x 25 lines
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- 110/220 VAC Auto Switching
- RS-232 Serial Port
- Parallel Printer Port
- External Monitor Port
- Soft carrying bag-optional

$1195 VGA **$1295 VGA+**

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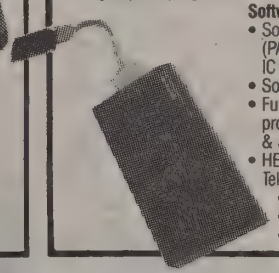
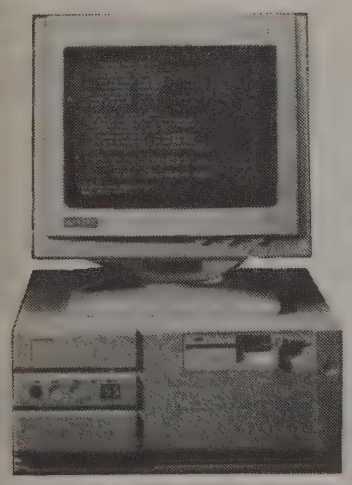
$575



Hardware Features:
- 40-Pin socket w/40 sets of software controlled circuit
- 40 sets of programmable TTL I/O
- 3 groups of programmable D/A voltage sources
- 2 groups of programmable OSC output sources
- Perfect filter and current limited circuit
- 60% of digital components in high speed CMOS HCT type
- Hardware expandable for complex device programming
- Hardware configuration is available for software designer

Software Features:
- Software for EPROM, EEPROM, BiPolar PROM, Programmable Array Logic (PAL, CMOS, PAL, GAL, PEEL, EPLD & FPL) Microcomputer (8748, 8751 & Z8 Series), IC Test (TTL 74/54 & CMOS 40/45 series) and Memory Test.
- Software rapid upgrades by floppy disk
- Function includes—Blank check, verify, Program, Security programming. Auto programming, File loading and saving, Screen editing for BINARY data, ACSII data & JEDEC fuse map
- HEX to BINARY code converter for INTEL 80/86 HEX, Motorola S1-/S2 HEX & Tektronics HEX
  - 2 ways or 4 ways BINARY file splitter and shuffler
  - Dump file to console in BINARY format
  - CPU 8751 dis-assembler file

COMPLETE SYSTEMS & PERIPHERALS



SYSTEM CONFIGURATIONS:
- Quality Motherboard
- 1 MB Memory
- 1.2 MB Floppy Drive
- 1:1 FDD/HDD Controller
- Multi I/O (2S/1P/1G)
- AT Case w/230 W PS
- 101 Keyboard

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486/25 w/128K Cache	1650
386/33 w/128K Cache	1950

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1:1 HD/FD Controller DTC 7280	59
Winchester XT HD Controller	42
HP Laser Jet II/IID	35

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Teac SD340 43 MB, 23ms IDE	$235
Seagate ST1144 125, 125 MB, 16ms	450
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Syquest SQ555 44 MB Removable, 2 Cartridges, 1 Host Adaptor	495

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14″ Mono	$95
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WIN Super VGA 0.31 1024x768	325
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Enhanced 101 Click (baby)	$30
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EPROM Programmer, EW-901B (1 Port)	95
EPROM Programmer, EW-904B (4 Ports)	125
EPROM Programmer, EW-701 (1 Port)	125
EPROM Programmer, EW-704 (4 Ports)	160
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IC Tester (ICT-302, TTL, CMOS, DRAM)	125

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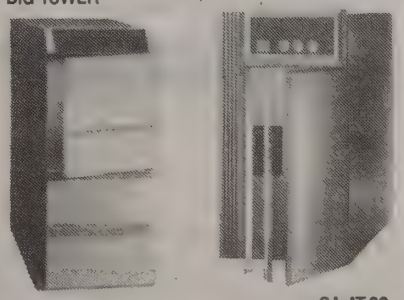

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1.2 Teac Drive
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Penta I/O (XT : S,P,G,Clock) 39
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Mini AT I/O (S,P) 30
AT I/O w/ IDE Controller 69
AT I/O w/ IDE Controller (Non DTK) 50
Serial Card (XT only) 19
Printer Card (XT, AT) 19
Game Card (XT, AT) 19
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5 C D ROM

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AT Case 50
Baby Tower w/ 200W Power 115
Mid Baby Tower w/ 200W Power 145
Tower AT w/ 230W Power 175

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1542B SCSI w/ kit 299
DTC
6280 1:1 ESDI 135
7280 1:1 MFM 70
7287 1:1 RLL 89
DTK
Floppy Controller (XT) 18
Controller 1.2 & 1.44 (XT, AT) 40
IDE Controller 35
IDE Controller (Non-DTK) 30
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Omni Bridge (up to 4 floppies; 2 int 2 ext) . . . 95
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ULT 12F/32 32K ESDI cache 185
ULT 12C/1 1MB ESDI cache 565
WESTERN DIGITAL
Gen Card (XT) 55
1003V 2:1 MFM 85
1006V 1:1 MFM 99
1006SR 1:1 RLL 115
1007 SE2 ESDI 155

8 DIGITIZERS

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SummaSketch II 12"x12" 4 button & pen 325

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1.44MB 3.5" w/ frame 68
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CP-3104 100MB 25ms 3.5" 395
CP-30104 120MB 425
CP-3204 200MB 16ms 3.5" 695
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4380-380 338MB 16ms ESDI 5.25" full 1145
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1.44 MB for PC / Laptop 245
1.2MB for Toshiba (except 1000,1100,1200) 195
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Bridge File 5.25" 360K/1.2MB for all PS/2 . . 215
Adapter for Bridge File 3.5"/5.25" 58
Portable EasyFloppy 3.5" for laptop 245
Portable EasyFloppy 5.25" for laptop 245

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MAXI 101 45
MITSUMI 101 45
101 Keyboard cover 4
Wrist Pro (wrist support) 20

12 LAPTOPS

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See Printers Section #21
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Tempo LX 386-20SX 60MB HD . . . . . .call
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Charger 95
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Battery for CF-150B 29
CF-170 8086 Backlit LCD
1.44 FD, 20MB HD 1575
TOSHIBA
T1000SE /T1000XE 999/1195
T1200XE 2085
T1600 - 20 / 40 . . . . . 2195/2495
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13 LASER PRINTER ACCESSORIES

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AVERY
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Laser Printer Labels for 3.5" diskettes 39
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Jet Memory 1MB (for HP IIP, III) 140
SuperSet + (425 Fonts Cartridge) 275
HP . . . see HP in Printer section #21
IQ ENGINEERING
Super Cartridge 1
for all HP Laser&True HP Compatibles 209
Super Cartridge 2 for HP II, IID, IIP, III, IIID 295
Super Cartridge 2 & 2LC 395
Super Cartridge 3 for HP III, IIID 275
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PANASONIC see Panasonic in section #21
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14 MEMORY CARDS

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Evercom 2400 Baud External w/ MNP5 . . . 185
Fax Modem 2400/9600 Internal w/ MNP5 . 239
Pocket Modem for Laptop 2400 w/ MNP5 . 215
FRECOM
Fax 96 145
Fax 96 w/ 1 Liner & Far Fetch Fax 199
HAYES
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Personal Modem 2400 165
SmartModem 2400B Internal/ External 245/385
INTEL
9600EX (9600 baud external modem) 565
SatisFaxtion card 399
VIVA (Computer Peripherals)
2400 Baud External for IBM / Mac 115/125
2400 Baud External w/ send fax 125
2400 Baud External w/ MNP5(for IBM/Mac) 145

16 MONITORS

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MATSUSHITA
ViewPerfect 2 14" VGA, 640x480, .29 . . . 295
ViewPerfect 3 14" ,1024x768, .29, Int 425
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9080i 16", 1280x1024, .28 Non-Int 1355
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3D 14" Multisync, 1024x768, .28, Int 575
3DS 14", 1024x768, Int 595
4D 16", 1024x768, .28, Non-Int 995
5D 20", 1280x1024, .31 1995
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1381 14" Super VGA, 1024x768, .28 375
POWER
Power 2 14" Super VGA, 1024x768, .29 . 305
QUME
830 14", 640x480, .41 245
835 14", 1024x768, .28, Int 345
RELYSIS
RE1520 15", 1024x768, .31, Non-Int 545
14" EGA 325
SAMSUNG
CJ4686 14" VGA, 640x480, .52 225
CVB4581 14", 1024x768, .31, Int 325
CVB4997 14", 1024x768, .28, Int,Non-glare 345
CSA 7571 17", 1024x768, .31, Non-Int 895
MA2365 12" mono 75
ML4571 14" VGA mono 125
SEIKO
CM1450 14", 1024x768, .31, Non-Int 599
CM2050 20", 1024x768, .31, Non-Int . . . 1650
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1304 14", 1024x768, .25, Non-Int 625
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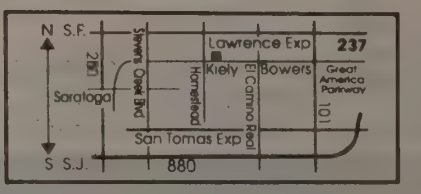

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- Headlines Cartridge (for HP II, IID, IIP) 185
- Complete Font Library (for HP III, IIID) 265
- Pacific Outlines I / II (for HP III, IIID) 185

POSTSCRIPT Emulation
- Pacific Page & 2MB (for HP II) 389
- Pacific Page P.E. (for HP IID,IIP,III,IIID) ... 325
- Pacific Page XL (for HP IIP,III,IIID) 715
- Pacific Page P.E. & Pacific Talk for Mac & HP IID,IIP,III,IIID 450
- Pacific Page XL & Pacific Talk 845
- Pacific Type 265

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  - 1MB $140
  - 2MB 190
  - 4MB 290
- Pacific 4 Memory (for HP IIP, III)
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  - 2MB 170
  - 4MB 270
- LP Memory (for IBM 4019E)
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  - 2MB 190
  - 3.5MB 265
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- Pacific Bar Code (for HP II) 315
- Pacific Bar Code P.E. (for HP IID, IIP, III) .. 315
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  - 256K 265
  - 1.25 MB 299
- Pacific Print (for network & HP II, IID, IIP, III, IIID) . 225
- Plotter in a Cartridge (for HP II) 225
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- 486-25 64K cache ISA/EISA 1595/2365
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- BOIS Award / Phoenix (386) 60/pair
- Keyboard Chip 30

18. MOUSE

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- C-9 Serial Mouse w/ Windows 3.0 130
- Catchword 99
- Cordless Mouse 139
- Dexxa serial mouse 29
- Mouseman Serial / Bus 69/75
- Scanman Plus / 256 ..... 139/285
- Trackman Serial / Bus 80/85

MICROSOFT ... see section #23

MOUSE SYSTEMS
- Omni Mouse II 35
- PC Mouse III 69
- PC Mouse III w/ Power Panel 89
- PC Trackball 49
- The White Mouse w/ Power Panel 56

19. NETWORK

3 COM
- 3C503 8 bit 199
  - 5 packs (5 boards 1 manual) 799
- 3C503-TP 8 bit / 5 packs 269/1160
- 3C505 16 bit, 256K / 5 packs 579/2620
- 3C507 16 bit / 5 packs 289/1250

WESTERN DIGITAL
- Ethercard Plus Elite 8bit / 16 bit 145/185
- Netware Boot Rom 34

CABLES & ACCESSORIES
- RG58 (BNC Male Connectors on each end) Thin Ethernet Cable 10'/25'/50' .. 15/20/30
- RG58-Twist 3
- RG58-Crimp 2.80
- RG58 50 Ohm Terminator 4.50
- BNC "T" Connector F/M/F 4.50

20. POWER SUPPLIES

- 150W (XT) $45
- 200W for Baby AT 60
- 220W (AT) 60
- 220W for Tower 78
- Hard Disk Drive Casing 65W 69
- 330W / 500W / 1200W (UPS) 199/399/999

21. PRINTERS

CANON
- BJ-10e w/ bag (Bubble jet)360 dpi,37K buf $319
  - Auto Sheet Feeder 85
  - Battery 45
  - Print Head Cartridge 22

CITIZEN
- GSX 200 (9 pin) 165
- GSX 140 (24 pin) 285
  - Color Option for above printers 45
  - Auto Sheet Feeder for GSX 140 129
- GSX 145 (24 pin, 132 column) 415
  - Color option for GSX 145 65

EVEREX ABATON
- Postscript Laser (3MB) 1395

FUJITSU
- DL 1100 mono / color 295/345
- DL 3400 365
  - color kit 95
- DL 4600 5-part form, bar code printing mono / color 995/1129

HEWLETT PACKARD
- Desk Jet 500 489
- Laser Jet IIP w/ toner 819
- Laser Jet III w/ toner 1525
- Laser Jet IIID w/ toner 2495
- Accessories:
  - Envelope Cassette (15 envelopes) 69
  - HP Postscript Cartridge 495
  - Legal Tray for HP II & III 69
  - Lower Cassette for IIP 160
  - Paper Tray for IIP 69
  - Toner for HP II / IIP/ III 85/75/85

OKIDATA
- OL400 Laser 599

PANASONIC
- 1180 / 1191 ..... 145/225
- 1123 / 1124 / 1624 ..... 249/249/349
  - 32K Buffer for above printers 65
  - Serial interface card 65
- 4420 Laser 829
  - 1MB Memory Card 199
  - Developer KX-PDP2 95
  - Drum KX-PDM2 99
  - Envelope Tray KX-P431 59
  - Fonts Card 95
  - Legal Tray KX-P425 45
  - Toner KX-P451 39
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  - Developer KX-PDP1 95
  - Drum KX-PDM1 145
  - Envelope Tray KX-P430 59
  - Fonts Card 95
  - Legal Tray KX-P420 45
  - Toner KX-P450 35
- 4455 (Postscript) ..... 1975 same as 4450i

QMS
- QMS-PS 410 4ppm, 2MB, 45 Fonts 1895
  - 1MB / 2MB Memory 299/465
  - Envelope Tray 69
  - Legal / Letter Tray 69
  - Lower Paper Cassette 160
  - Toner 95
- QMS-PS 810 8ppm, 2MB 2995
- QMS-PS 2210 / 2220 ..... call
- ColorScript 100-10 4MB, 35 Fonts 6595
- ColorScript 100-30i ..... call

SEIKO
- Smart label Printer (IBM/APPLE) 175

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- Toner for Laser Printers ..... visit us

22. SCANNERS

- MICROTEK MSF-300Z color/gray flatbed .. 1785
- PLUSTEK Scan Plus 8 bit output gray sheet-fed, comes with Calera Wordscan and Picture Publisher software ..... call
- Hand scanners ..... see Logitech in section #18

23. SOFTWARES

ADOBE
- Complete Type Library ..... call
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- Plus Pack for Mac / Windows 3.0 135
- Photoshop for Mac 569
- Postscript Cartridge for HP II 285
- Streamline for Windows 3.0 225
- Type Cartridge 1: Display Faces 225
- Type Cartridge 2: Best Sellers 235
- Type Manager for Mac / Windows 3.0 62
- Type Set 1/2/3 for Mac / Win 3.0 ... 75/75/105

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- DOS 3.3 / 4.01 60
- DOS 4.01 w/ Windows 3.0 130
- Entertainment Pack for Windows 3.0 35
- Excel for Windows 3.0 299
- Flight Simulator 39
  - Maxx Control Yoke 57
  - Maxx Pedals (IBM) 39
  - Maxx Instrument Flight Training 66
- Learning DOS 35
- Microsoft C 6.0 309
- Mouse Serial 200PPI 69
- Mouse Serial / Bus 400PPI 99
- Mouse w/ Paintbrush 99
- Mouse w/ Windows 3.0 157
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- OS/2 Presentation Manager Tool Kit 1.21 . 309
- Power Point for Windows 289
- Productivity Pack for Windows 38
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- Project for Windows 1.0 429
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- Quick C Compiler w/ Quick Assembler ... 125
- Software Development Kit 3.0 309
- Windows 3.0 69
- Word 5.5 207
- Word for Windows 3.0 309
- Works 2.0 99
- Works w/ Mouse 2.0 159

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- Excel 3.0 259
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- Powerpoint 2.01 259
- Word 4.0 / Works 2.0 ..... 259/205

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- LetterPerfect / PlanPerfect 135/255
- WordPerfect 5.1 239
- WordPerfect Executive / Office 145/95

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  - C++ Profession for Windows 299
  - Turbo C++ (Dos Version) 95
  - Turbo Pascal Professional 6.0 199
- Central Point Backup 6.0 65
- Corel Draw 2.0 349
- Davidson Education Algebra/ Read/ SAT/ Spelling . 30 & under
- DR DOS 5.0 upgrade (for users w/ any DOS) 75
- Fastback Plus 112
- Geoworks Ensemble 129
- Grammatik IV 2.0 57
- Grammatik IV for Windows 57
- HP New Wave 3.0 109
- Hardvard Graphics 2.3 295
- Individual Software ..... 39 & under
- LapLink Rel 3 95
- Lotus 1-2-3 Rel 3.1 369
- MacPrint 85
- More Fonts 85
- Norton Commander 3.0 89
- Norton Utility 5.0 115
- PC Tools 6.0 89
- PFS: First Choice (w/ Prodigy start-up kit) .. 85
- Pacioli 2000 24
- PageMaker for Windows 4.0 479
- Personal Lawyer/ Lifestyles 55
- Pro-scan (virus identifier & remover) 65
- Quarterdeck DesqView 286/386 v2.3 . 79/125
  - Expanded Memory Manager 386 v5.1 . 64
  - Manifest 45
  - Qram 45
- Quicken for IBM/Mac 39
- Software Source (Public Domain) 3
- Sound Blaster 145
  - CMS Chip / Speaker 29
- Ventura Publisher Gold for Windows 519
- Wordstar 6.0 245
- XTree Gold 2.0 99

24. TAPE BACKUP

AT & T
- 40MB $185

COLORADO
- DJ-10 (40,60,120MB) 255
- DJ-20 (250MB) 345
- AB-10 Controller for DJ-10 75
- FC-10 Controller for DJ-20 95
- CK-17 Cable 20
- KE-10 Ext Hardware kit for PC, XT, AT 119

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- 60MB AT Floppy Ext w/ power 395
- 40MB PS/2 Floppy (50,60,70,80) (DC2000) w/o media 265
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25. VGA CARDS

All VGA cards come 1024x768 except as stated
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- ATI chipset 256K/512K 115/135
- Everex EGA Card 59
  - Viewpoint Standard (800x600) 75
  - Viewpoint 256K/512K 155/175
  - VRAM (1MB DRAM) 235
- Genoa 6300 256K/ 6400 512K 115/135
- Genoa 6400A 512K 205
- Hercules Work Station 650
- Orchid Prodesigner II 1MB 265
- Paradise Plus 256K/512K 155/175
- Paradise 8514/A Plus 459
  - 512K memory upgrade 205
- Paradise chipset 256K/512K 95/115
- Photon Ultima Turbo (1280x820) 335
- Trident chipset Super VGA 1MB 119
- Video 7 1024I 256K/512K 185/205
  - VRAM 512K 365
  - VRAM II 512K 365
  - SPEA 1280 (1280x1024) ..... call

TRAINING CLASSES

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May 25 ..... Build your own 386 system	May 19 ..... DBase IV
June 8 ..... Build your own 386 system	May 26 ..... Lotus 1-2-3 Rel 3
June 22 ..... Build your own 386 system	June 2 ..... DOS 4.01
	June 9 ..... Windows 3.0
Class Includes:	June 16 ..... WordPerfect 5.1
9 am - 4 pm Hands on experience and	June 23 ..... DBase IV
A complete 386-25 system:	June 30 ..... Lotus 1-2-3 Rel 3
1MB, 1.2 & 1.44 FD, 40MB HD w/ controller	
AT Case & Power, 101 Keyboard & mouse	Full Sunday 9 am - 5 pm
Super VGA monitor w/ VGA card	Please call if interested in evening class
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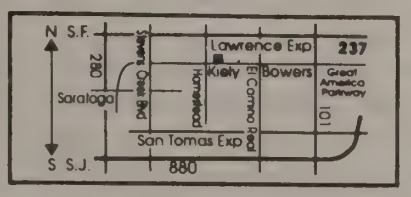

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Video Professionals Join The Toaster Revolution

With An Amiga And A Video Toaster, Spectacular Presentations Are Within The Reach Of The Small Shop

BY BEN AND JEAN MEANS

Your assignment: Produce high-quality, low-cost desktop video for corporate communications.

You could, of course, spend tens of thousands of dollars for high-end workstations. Or, as video professionals around the country are discovering, you can get an Amiga and NewTek's Video Toaster, spend a lot less, produce spectacular results, and underbid your competition.

When NewTek showed up at Macworld Expo in January with a Toaster secretly disguised as a Mac II, the crowd went wild...only to find that the Toaster works only on an Amiga. But Mac fanatics who wanted low-cost desktop video were not to be denied. Since the Toaster's video magic depends on the Amiga's custom chip set, NewTek has announced a standalone Toaster which will interface with an IBM or a Mac II. Newtek put a Toaster board in a dedicated Amiga with a 52 meg hard disk and 5 megs of RAM which autoboots to the Toaster, completely hiding Amiga DOS from the user. "We couldn't put an Amiga on a card, so we hardwired a Toaster to an Amiga," says NewTek's Mark Randall. The Age of Computer Video has arrived.

Toaster 1.0 only reads Toaster and Amiga files. But the NewTek workstation will be able to call up that AutoCAD 3D file of your proposed company headquarters in the Toaster and plop it onto your chosen site, which you've retouched on your Mac in Photoshop. Then you'll output the composite shot as an animated flyby to videotape—and also to PostScript for the still hardcopy to go inside your annual report. This connectivity sets the standard for integrated desktop video.

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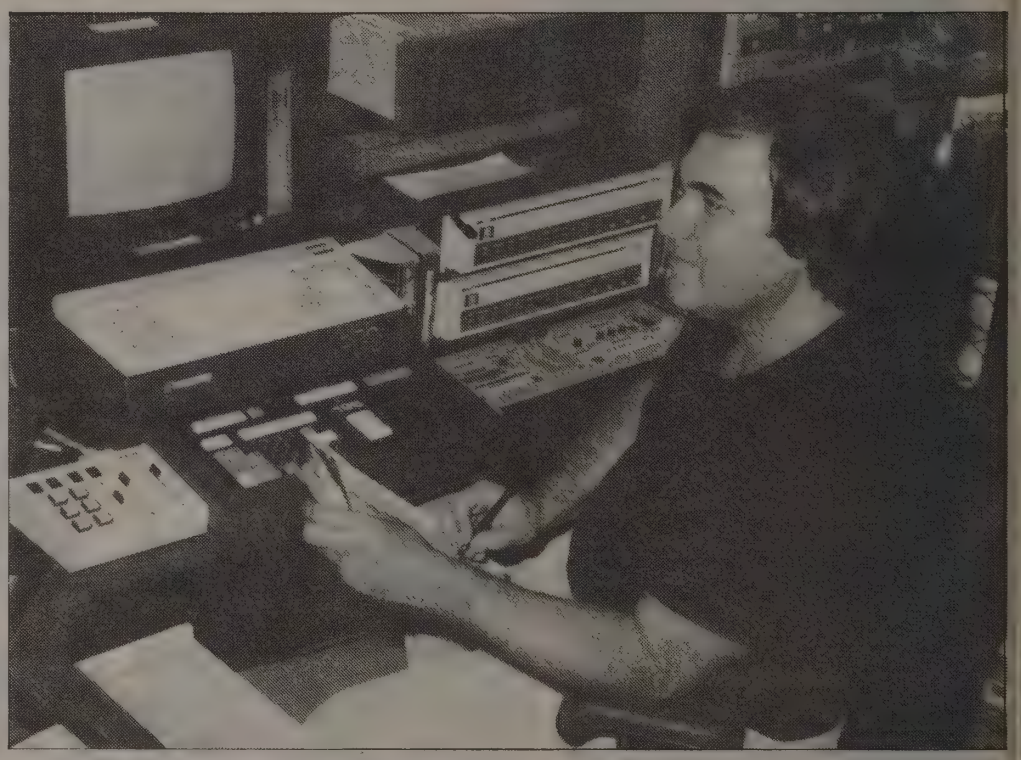

"I couldn't live without it," says Larry Rosen, owner of the L.A. Videograms post-production facility, of the Video Toaster.

WHY DESKTOP VIDEO?

Desktop publishing helped us reach those who read. But who reads anymore? Video is everywhere; it's the number one media experience. CD-ROM and DVI are just not there yet, with too few drives out in the marketplace. But VCRs are everywhere, and even if people still haven't figured out how to make their VCR clocks stop flashing 12:00 over and over, they sure know how to watch video.

International computer consultant Joel Tessler is en route to Europe, where he is installing Toasters on Polish network television. He says, "It's starting to dawn upon the information community that video is part of the business world today; it's not something that's coming. It's happening now. There simply isn't time to fly to every person you have to see. I send video tapes to Europe all the time describing pieces of machinery and different types of computer software. Video is the way we are doing business today—maybe not everybody, but I can guarantee that when the guy with the Video Toaster goes into the boardroom, he's going to get the job over the guy with the pie chart.

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386SX/16 Mono	$889	$1,029	$1,089	$1,439	$2,289
386SX/16 Super VGA	$1,159	Special	$1,359	$1,709	$2,559
386SX/20 Mono	$919	$1,059	$1,119	$1,469	$2,319
386SX/20 Super VGA	$1,189	Special	$1,389	$1,739	$2,589
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Sharp 1.2/360KB (AT Comp Models w/Ext FDD Port)	269
Zenith 360KB (SuperSport 181-92, HP Vectra LS/12)	239
Zenith 1.2 MB/360KB (SuperSport 286, HP Vectra LS/12)	269
Zenith 360KB (181-93, 183-93, MiniSport)	269
Zenith 1.2 MB/360KB (SuperSport 386)	299
Epson 1.2 MHz/360KB (Equity 286LT)	269
Compaq 360KB (SLT)	239
Compaq 1.2 MB/360KB (SLT)	269
Compaq 360KB (LTE)	269
Compaq 1.2 MB/360KB (LTE)	299
Tandy 360KB (1400LT)	239
NEC 360KB (Prospeed 286 and HD)	269
NEC 1.2 MB/360KB (Prospeed 286)	299

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Conner CP3044 40 MB 25ms	259
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ST251-1 40 MB MFM 28ms	239
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ST 4096 80 MB MFM Full Ht.	499
Conner 100 MB IDE 3.5"	389
Conner 200 MB IDE 3.5"	685
ST 1239 211 MB IDE 3.5"	699
CDC 94211 91.5 MB 16ms	299
CDC 94161 150 MB 17ms	449

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Pacific Rim 40 MB, No Battery Option	799
Pacific Rim 100 MB, No Battery Option	1099

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OKI Click Sound	42
101 Key Soft Sound	32

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Samsung 4891 640x480	$309
Samsung 14" 1024x768 0.31	315
Samsung 14" 1024x768 0.28	339
AAmazing 14" SVGA 1024x768 0.28	335
NEC 2A Multi VGA	480
Seiko 1450 VGA	650
14" Amber MDA	95
12" Amber MDA	75

VIDEO CARDS

Mono MGP	$27
VGA 800x600	72
Paradise OEM 1024x768	99
TVGA 512K 1024x768	95
TVGA 1 MB 1024x768	129

MICE

Microsoft 3 Button	$69
Logitech 3 Button	69
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Steph Greenberg of Metroplex Teleproductions created a twenty-second animation featuring the ADT logo using the Toaster.

we're not in the industrial revolution. In order to do business today, you *must* know how to do video. For people who market their wares, the biggest thing that goes on in the world today are all these road shows. What do these people have? They have video tapes to show their products; the better these video tapes look, the better they communicate, the more of a chance that their company is going to survive."

WHAT'S A TOASTER?

The Toaster loaf is a baker's half-dozen slices for cooking up broadcast quality, NTSC video on a home computer. The Switcher does simple transitions like cuts, dissolves, and wipes among the Toaster's seven video inputs (four external, two frame buffers, and one background generator.) The Digital Video Effects (DVE) does fancy transitions between scenes like flips, tumbles, and zooms.

The Frame Grabber grabs real time video and displays it on Toaster's two frame buffers in full broadcast resolution, while the Still Store loads grabbed frames from your hard disk in three seconds to the frame buffers. The Luminance Key uses brightness to create an electronic matte or stencil, and the CHROMA FX color processes incoming video to do solarization, color stripping, and color correction. The Toaster has its own CG (Character Generator) which does broadcast quality titling, along with its own paint program, Toaster Paint—a 24-bit version of Digi-Paint 3 with 16.7 million colors in 736 x 480 resolution.

Lightwave 3D is Toaster's 3D animation and rendering program; Lightwave 3D Modeller designs 3D objects for use in Lightwave.

Best of all, it's only $1,595 for the complete hardware and software package, if you've already got an Amiga.

REPORTS FROM THE FIELD

How well does the Toaster stack up in the world of broadcast and industrial video?

"I couldn't live without it," says Larry Rosen, owner of the 3/4" post-production facility LA Videograms.

"It's tripled my business," says Wayland Strickland, computer graphics director for WKCS Channel 68 in Orlando. Strickland also uses his Toaster to create animations for Juris Corp. which are introduced in courtrooms as evidence; Juris has won every case in which it's used Strickland's animations.

Three years ago, Steph Greenberg had trouble supporting himself; today he's working six and seven days a week, and the only trouble he has is getting time away from his Toaster. And whenever he does, he carries a Sony Watchman Pro along to show his ever-increasing list of clients his latest gorgeous productions, like the sales video he did for the ADT alarm company. Greenberg did a twenty-second planetary zoom shot with Lightwave 3D that swoops in on the earth, past motion-blurred stars, through clouds, over continents complete with mountains and rivers, to reveal a Grecian marble ADT logo that releases a massive energy blast.

He says, "When we show things like that, clients are definitely impressed, because they're seeing animations they normally couldn't afford. And it isn't that we're selling ourselves out cheap. It's that the amount of effort that's put into these things is minimized because there's no mystery to using Lightwave.

"Lightwave is one of the most powerful animation programs available. I've shown it at a number of institutions where they've considered more expensive systems. When I showed the Toaster system, they gravitated towards it because the effects and integration are better. The interface is more intuitive and easier to use, and their designers are able to relate to it better than some of the more arcane programs on other systems.

"Lightwave alone is worth the cost of a Toaster. It's such a pure creative tool, you can go straight from your brain onto the screen. It has raised the production value of the work that we do here. Clients ask me questions, and when I show them how the interface works, it totally blows them away. The fact that Lightwave 3D is integrated within the frame buffer is a very strong selling point for the Toaster, not to mention being able to grab a frame off video or take a camera and shoot something in full color and then digitize it to make a texture map.

Mike Lehman of Digital Spectra used the Video Toaster's Lightwave 3D modeler to create a three-dimensional airplane, then chose light sources and rendered the shaded image.

"Lightwave has some absolutely amazing capabilities, it can run seven different texture maps per surface, and of course each object can have many, many surfaces. The limit is basically your memory and how efficient you are at using those texture maps. It's absolutely phenomenal to have that large an amount of surface control. The look is just outstanding. The Toaster system is comparable to systems that cost thirty times as much to put together.

"One thing Lightwave supports that I really appreciate is the ability to store animation frames on a hard disk ahead of time. Our edit system goes for a lot of money per hour and we could not shut it down for the four to five days that it might take to do an impressive animation."

RESOURCES:

Steph Greenberg
Metroplex
Teleproductions
(213)398-4336

Mike Lehman
Digital Spectra
(213)370-6008

Larry Rosen
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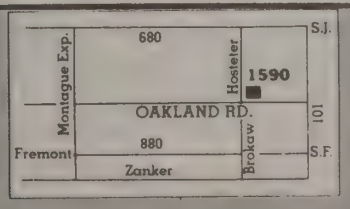

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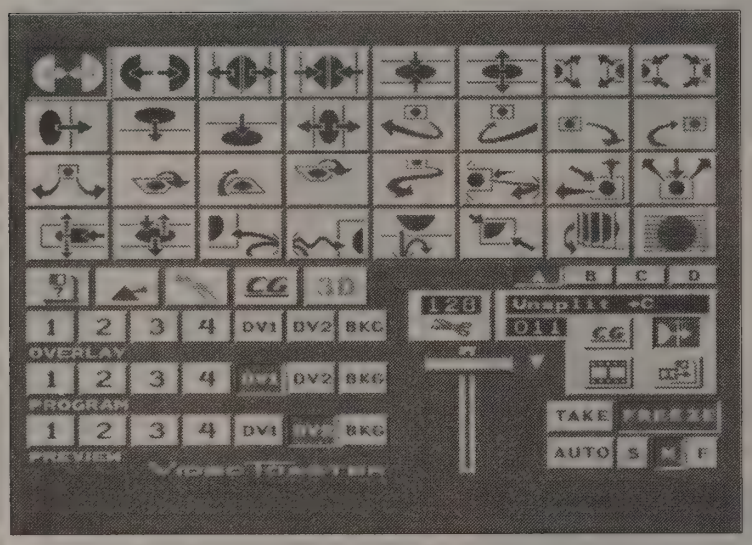
The ADT logo animation took Greenberg three days to render over a weekend, and he adds, "When I came back, the Toaster had stored all the frames on the hard disk; then we were able to record them to tape in about two hours. That saved our client a great deal of money; without this capability our client would not have budgeted the animation. I haven't seen anything else that is as complete a software and hardware package as the Toaster. It was a good decision to include Lightwave 3D with the Toaster—or in my case, they included the Toaster with Lightwave 3D."



The Video Toaster offers a full range of professional tools at a bargain price.

WKCS bought a 386-based Pansophic system for $50,000, but now it's gathering dust in the studio while Wayland Strickland works comfortably at home without the rigors of a time clock. He says, "The Pansophic was illogical in the way it worked, and so incredibly slow. It had render error to where polygons didn't show, and you couldn't do anything complex in the way of objects.

"Now with Lightwave 3D, there's no more frustration in wanting to do something that the software's not capable of doing. I haven't found anything that the Toaster can't do yet, and I've done a pretty wide range of stuff."

One afternoon he showed the Toaster to some friends who made their living using a Wavefront graphic computer; shortly thereafter they sold their several-hundred-thousand-dollar workstations to buy Toasters.

Larry Rosen uses the Toaster every day on projects which include an upcoming animated feature film, created entirely on the Toaster. Even though he's only had his board for six months, he says, "I simply couldn't live without it."

His favorite Toaster slice is the frame store: "It's extremely important to me; we can fix a lot of things with its ability to grab live and still video and then manipulate it. The frame store alone is worth the price of a Toaster."

Rosen did a demo reel for an actor who was starring in the CBS Movie of the Week. He needed to do a freeze frame of the actor's face, but the only frame he could use had a dropout. He recalls, "We had to have that particular frame, but there was a white, 1" line right in the middle of his face. I just threw it into Toaster Paint, picked up the edges of his skin coloring around the line, and stamped it over the line. I did the same thing on the background and sent it back to the frame buffer. It was clean as hell. You couldn't tell the line was ever there."

Rosen bought the Toaster out of curiosity and ended up shelving his plans to buy an ADO 100 to perform fancy DVE moves. "I was on the verge of buying an ADO 100 but didn't, because I wanted to see what the Toaster could do. For the type of work I was doing, I saved myself $20,000. There are limitations, but the pluses are immense."

While the Toaster cries out for an accelerator board and a large hard disk to use Lightwave and Toaster Paint to full advantage, the Chroma FX, CG, and DVE FX work just fine on a base machine. Mike Lehman, whose film special FX credits include *Ghostbusters* and *2010*, proved this the hard way...with a client from a large PR firm looking over his shoulder and a brand new Toaster in his hands. He says, "The Toaster came in and right off I did a job with it. We went to a pro editing bay, which had the $100-an-hour room but also had a little corner room, an old clothes closet almost, with some older equipment in it that we got for $25 an hour.

"We pulled out this old 3M character generator and dropped the Toaster in its place to do the character generation. We did a whole bunch of DVE and Chroma FX, so we used three-quarters of what you can do on the Toaster on our first job. I had only had the Toaster two weeks."

The switcher is very intuitive, and Lehman learned how to use the Toaster DVE in literally five minutes. He adds, "We pulled it off; we had the client there and they were impressed. This is with an unaccelerated Toaster, straight 68000."

TOASTER: THE COMPETITIVE CHOICE

In the lean, mean '90s, ad budgets are shrinking at the same time that the air waves are opening up new opportunities to communicate with the impact of video. The Video Toaster provides the first integrated computer platform for the low-end industrial quality market, created on S-VHS, Hi8, and U-Matic gear. The Toaster even competes in the high-end broadcast market by letting you do pre-production in your home or office to cut costs when you need to rent time in a high-end studio for polished post-production.

The edge in the '90s won't go to the company with the best goods or services. The edge belongs to the company with the best marketing and advertising. Video communicates with greater power than a printed page, and the Toaster puts video within the grasp of the Average American.

The Toaster revolution is on, and it's changing the way we do video, just as video is changing the way we communicate. Says Tessler, "A person who buys just a Toaster and a camera is going to learn a lot about video, which is necessary to survive the future. The Toaster is part of the new symbolic economy that's based on information...and information is power.

"When people look back at 1991, they're not going to be talking Sony or Mitsubishi. They're going to be talking about a little company in Kansas called NewTek. And NewTek's got a lot more tricks up their sleeve than anyone can imagine. I don't think we've seen anything yet."(NewTek, 1-800-843-8934) ■

About These Graphics

Normally we don't feel compelled to explain to our readers how we get the graphics for our stories. Normally it's pretty generic. Getting these graphics, however, wasn't, and the fact that they're here is a testimonial to a lot of good software and a lot of people's heroic efforts under pressure.

Three days before we went to press, long-promised artwork had failed to materialize, leaving us with the dubious prospect of running a Video Toaster story with no graphics. So the intrepid Ben and Jean Means called various artists they'd interviewed for the story, explaining that we needed some visuals from them the day before yesterday.

Protracted phone conversations and much hair-tearing ensued; because while it's become a fairly routine matter to translate PC graphics into our Mac layouts, the Amiga sits off in a relatively isolated universe, and there is nothing on the premises that will read an Amiga disk. This left us with the modem—and the new problem of finding a common file format. Our Macs will happily deal with TIFF or PICT or most types of EPSF, but the Toaster wizards had no means of converting their files into those formats. Finally we settled on GIF, CompuServe's proprietary graphics format, and spent a couple of hours modeming files up from LA. We used various programs on the Amiga end, and received the files in binary format in MicroPhone on the Mac end, with the file type set to GIF.

And, much to our delight, Adobe Photoshop opened them right up.

So if you find yourself in a similar situation, you may find this information useful. Here, we're still grinning.

—ME

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WESTWOOD COMPUTERS

Adventures At DB/Expo

Mac Meets MIS, And Other Tales

BY DAVID MORGENSTERN

I recently got a chance to see how little I know about computer databases. Some might think this a painful self-revelation; however, I found myself overjoyed that I wasn't clogging up my poor bio-storage with this arcane knowledge.

This feeling evolved as I strolled around the exhibits at the DB/Expo '91—the National Database Exposition. The theme this year was "Emerging Database Technologies for the '90s." Hold me back! But even in the Land of DB/2, VAX, VMS, SQL, I found BMUGers.

APPLE WHO?

In years gone by, I would have had second (and third) thoughts about attending a trade show highlighting corporate database management systems. I am hardly a suit-and-tie kinda guy.

But the increasing power of desktop computers, micros, and workstations has pushed the database world on its head. The surprise of the Expo was the appearance of Apple Computer, and a couple of other Macintosh vendors, on the exhibit floor.

BMUG

The Apple booth hosted more than two dozen vendors with Mac front ends for mainframe databases. They are pushing their Data Access Language (DAL), which was once Network Innovations' CL/1 before Apple bought it a year or two ago. This is an SQL-based language that allows Macintosh applications to access and interact with data stored on various mini and mainframe systems.

Macintosh people were interested in the DAL developer's toolkit and server software, and some brave Management Information Systems (MIS) professionals crossed over the border.

It was a typical Apple booth, filled with colorful software—and people. I saw enormous earrings on both the women and men who were demonstrating products. Twenty-one inch televisions, stacked eight high, were running video testimonials of happy DAL users.

This contrasted with the plain suit-and-tie booths that surrounded the Macintosh ghetto. The men gave the demos, while the ladies served the frozen yogurt—and cheesecake.

There were two other Mac-based booths near Apple. ACIUS was showing 4D DAL, a DAL-based toolkit for 4th Dimension. MacVONK was showing their own high-performance SQL database server, P•INK SQL. This fast client/server software costs $1,745 for a five-client package.

I had fun meeting members of the International dBASE Users Group (IDBUG). They have a bimonthly journal, code library, local groups, and a BBS. If you're an Xbase programmer, this may be your rescuer. Their membership is $60/year ($95/year outside the US). 70A Greenwich Avenue #101, NY, NY 10011.

Copyright © 1991 by David Morgenstern. All rights reserved worldwide. *David Morgenstern is a Bay Area "MacNurturer" and BMUG member. David is DMORGENSTERN on MacNET, 72030, 1607 on CompuServe, and himself at (415)549-BMUG.*

DO NOT FOLD SPINDLER, OR MUTILATE

Apple's chief operating officer, Michael Spindler, gave an hour-long speech in the new wing of the Moscone Center. I took the escalator upstairs and almost flew out the window. The glue used in the new construction was still drying, getting everyone high. I know that's why I couldn't keep my eyes open through the entire talk. Zzzz...Apple...zzz... future...zzz. Great stuff, Mike!

Spindler's message was not received warmly by the database professional audience. His revolutionary notion is that users are the most important factor for the future of information. Our hardware technology's abilities double every couple of years, but the applications that can help non-technical humans make sense of the data progress more slowly. Everyone needs powerful and fast computers that are simple and intuitive to use. Shocking stuff!

Spindler's English is very clear now, but he used a Macintosh-ism that went over the heads of his command-line audience. When talking about how users access data, he said, "When you double-click on the chart." Double what?

He had a couple of good lines:

•On standards: "The underlying technology of computing can not be held hostage to one opinion. It's too important to users... There is no single opinion for the future of computing." He felt that new groups, and companies, will define computing from the bottom up. Mainframers didn't invent the personal computer, and Apple was actively looking at new technologies. The not-invented-here attitude of a few years ago seems to have departed, and buy-it-and-change-the-name rules.

•On the the attitudes of computer professionals: "No one wants to

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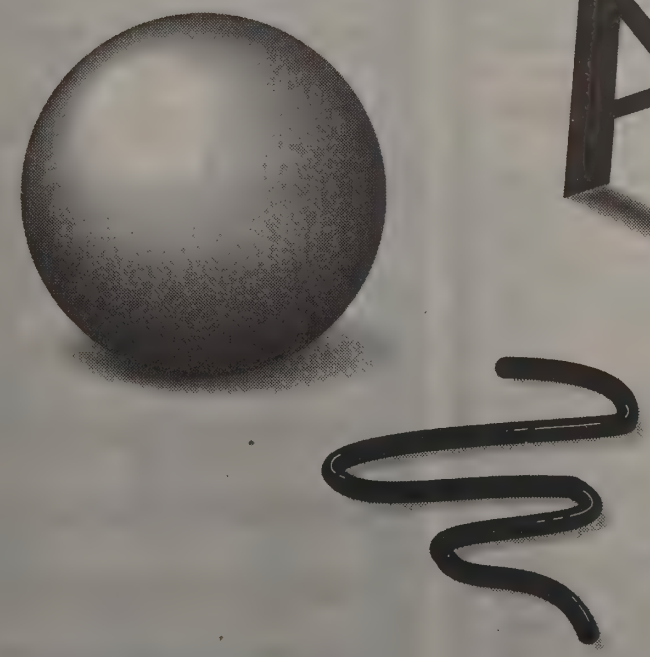

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be an end user...who in the history of human behavior wants to be a terminal, dumb or intelligent?"

•There was a little translation problem in the speech. Spindler's English is very clear now, but he used a Macintosh-ism that went over the heads of his command-line audience. When talking about how users access data, he said, "When you double-click on the chart." Double what?

BAKED APPLE A LA REUTER

Poor Spindler. He thought he was finished for the day when he headed out the conference doors, with his entourage of Apple marketeers. Not quite.

A Reuters News Service reporter picked out a line from the speech—"I'm terrified about where my fiscal 1992 revenues will come from." I remember that he said this twice, referring to the climate of information analysis and the needs of managers for timely results. The reporter took this to be a comment on Apple's future. The story was sent down to editorial offices in Los Angeles, and then to New York.

After a bit of creative editing, the story got even better. Spindler was now Apple's Chief Executive Officer. Interestingly, "Apple expanded its product line to include personal computers."

This story played on the radio and was sighted in small town newspapers around the country. A day later, after Apple public relations set them straight, Reuters sent out a revised story.

I doubt that Reuters will ever believe Apple PR again. Two weeks later, Apple announced its second quarter earnings report. The news sent their stock down 13% in one day.

It showed that even in a recession, they were shipping more product than ever—up 85%. Net revenues were up 19% over the same quarter last year. The sales were mostly the low-priced, low-margin models. For some inexplicable reason this news surprised the Wall Street computer stock watchers.

For years, everyone has said that Apple

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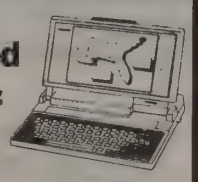

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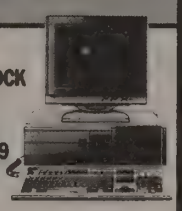

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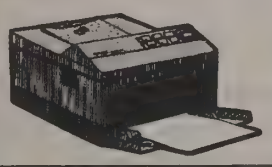

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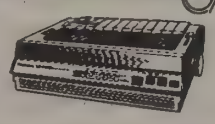

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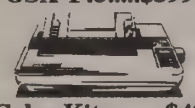

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should try for more market share, the Macintosh is too expensive, and that it was going to reign in niche-market hell. Mac software developers screamed for a platform that wouldn't empty buyers' pockets of all available cash.

There was zero ambiguity that this strategy would reduce profit margins. That was the whole point. Apple had lots of cash, and it was time to lower margins to bring new users into the Mac community. Apple was clear-cut about this change when the low-margin Macs were introduced last year. It seems to have worked, judging from the extra volume of calls at BMUG.

LOVE AT FIRST BYTE

Have you ever fallen in love? A thunderbolt of instant attraction hits you right between the eyes—if the love-object is software. We see hundreds of demos yearly at BMUG meetings, but only a bare handful have really struck my imagination.

Why would a music major be wild about Interactive Physics by Knowledge Revolution?

Interactive Physics is a two-dimensional Newtonian physics laboratory computer simulation. It is a real "wow" program. Users create experiments by creating objects on the screen from a palette. Shapes are drawn and are affected by springs and ropes. The program calculates the elasticity and friction of an experiment, and then makes a movie that can be replayed.

The program gives teachers and students ways to see solutions that normally could only be read about in a book. Even gravity can be changed, or turned off. If you want to see what the results of an experiment would be on the moon, just adjust the gravity slider to the moon setting. Fortunately the program defaults to Earth normal gravity.

The experiments can be analyzed with a variety of meters, strip charts, or a numerical display. The center of gravity can also be displayed during animation.

To get a reality check, I called BMUG's physics teacher, Ron Hipshman. He runs the computer program at the Exploratorium, San Francisco's science museum, where we have our BMUG West meetings.

He said that simulations are always exciting, but most packages (like Stella and Extend) don't actually show on the screen what real objects do. Their output is confined to numbers and graphs, which is the way most people in the scientific community want to view the information. To be able to manipulate physical objects, and do things to them that you couldn't otherwise do, is really nice.

It also allows teachers to do really violent things that can't normally be done in the classroom. Ron said, "The car crash example lets you watch some poor guy fall on his groin, and you know it's not hurting anybody." Now we know why the kids go into physics—the smashing and crashing!

He knows Knowledge Revolution, a local company, has talked to educators to discover what really works and what teachers would find useful. "A shocking attitude in a software company!"

UPCOMING EVENTS:

May 9	Computed Designs Swing Shift , Insignia Solutions Soft PC.
May 15	Special Wednesday Meeting. System 7.0 Release demo.
May 16	Finals. No main meeting.
May 23	Finals. No main meeting.
May 27	BMUG West meeting at SF Exploratorium museum. Digital FX Video FX.
May 30	Power Up Address Book Plus, Fast Forms, International. Business Software Data Club.
June 6	New Latitudes MasterPlan.
June 13	AG Group Local Peek, Ether Peek,NetWatchman (Networking management).

•Your Expanding Infosphere Radio Show, Saturdays at noon, KALW-FM 91.7, has BMUG meeting announcements. Check it out!

BYTES AND PIECES

When I rule the world: Part 2. This is the second installment of a half dozen complaints I will remedy when I rule the world.

•Keyboard plug connections will be tucked safely out of the way.

The standard Macintosh Apple Desktop Bus keyboard is the prime offender. The design flaw is as obvious as the gills on a fish. The bus cable-plugs stick out several finger's width over the edges of the keyboard. This puts them right in the way of your hand when you use the mouse or place books on your desk. The small footprint keyboard that comes with the Apple IIGS is on the right track. The ADB sockets are recessed, out of harm's way.

•We usually think of computer thievery beginning and ending with the high prices that we're forced to pay at the corner silicon shop. That's just the closest incident to our bank accounts. Bandits have been busy foraging in the lower levels of the computer food chain.

Around the world, gun-toting thieves have been carting away the goods. The robbers used to focus exclusively on memory chips,

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CASH PRICES

when DRAM was expensive. They're impossible to trace, in high demand, and are easy to run with during a getaway. A strong suspect was able to carry $100,000 under one arm.

The usual getaway, low-profile, blend-into-the-crowd vehicle of choice is a late model Porsche. Who would look twice at a fancy car filled with two dozen laptops, a box of chips, and a couple of PCs? Unfortunately, the bottom fell out of the market a year ago, so they've had to find better pickings.

Macintosh users have been lucky that the new target of choice has been Intel 386 chips, rather than the Motorola flavored microprocessors. I'm sure we will see 4MB SIMM strips, the ones we want to pump up our System 7.0 juiced machines, on the preferred list soon.

NEW FROM BMUG LABS

The BMUG product workshop has been busy the past month. We have two new products that you will enjoy.

The first is an expanded and improved edition of *Zen and the Art of Resource Editing, BMUG's Guide to ResEdit 2.1.* The book includes information about how to use ResEdit from a beginner's perspective. The new edition is easier to read, has better figures, and offers more explanation of confusing concepts. It also contains information on customization under System 7.0 and changes in resources. The price is $15 for members and $20 for non-members. Please call the BMUG Office if you have any questions.

The second gem is The BMUG Macworld Video Tour: San Francisco '91, our first video product with production values. Mike Rouan, BMUG cameraman extraordinary, bravely followed me around the opening day of the Expo. We raced around the show floor, filmed demonstrations of interesting products, and interviewed BMUG know-it-alls. The VHS tape is a two hours in length and costs $15. ■

What Is BMUG?

BMUG is an educational, non-profit, consumer advocacy group organized to share information and provide critical direction to users and developers in the computer community worldwide.

Like any growing organization, it is many different things to its ten thousand international members. BMUG supports many Special Interest Groups (SIGs), an eight-line Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual, four hundred-plus page book that we call our "newsletter." Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6-9 (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG Office, 2055 Center Street (a half block from the BART Station) is open to the public 9 am to 5 pm. Please come by and say hello, meet other members, and hang out.

The BMUG HelpLine, (415)540-1742, and our fax number, (415)849-9026, provide technical assistance and telephonic hand-holding during business hours (11 am–5 pm). If your question can't be answered on the spot, we try to get you in touch with someone who can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around, with six hundred-plus double-sided disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM™ Version II,* our library and more on CD-ROM.

Our BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are as well as send mail to users everywhere! BMUG is a part of the international USENET network (ucbvax!garnet!bmug) or (user.name.bmug@garnet.berkeley.edu). With our multi-line capability you are now able to have access to BMUG almost twenty-four hours a day. It's easy to use, fun, and a great resource.

To get some further information about BMUG please write to: BMUG, 1442A Walnut Street #62, Berkeley, CA 94709. If you prefer to phone our business office call (415)549-BMUG, or FAX (415)849-9026.

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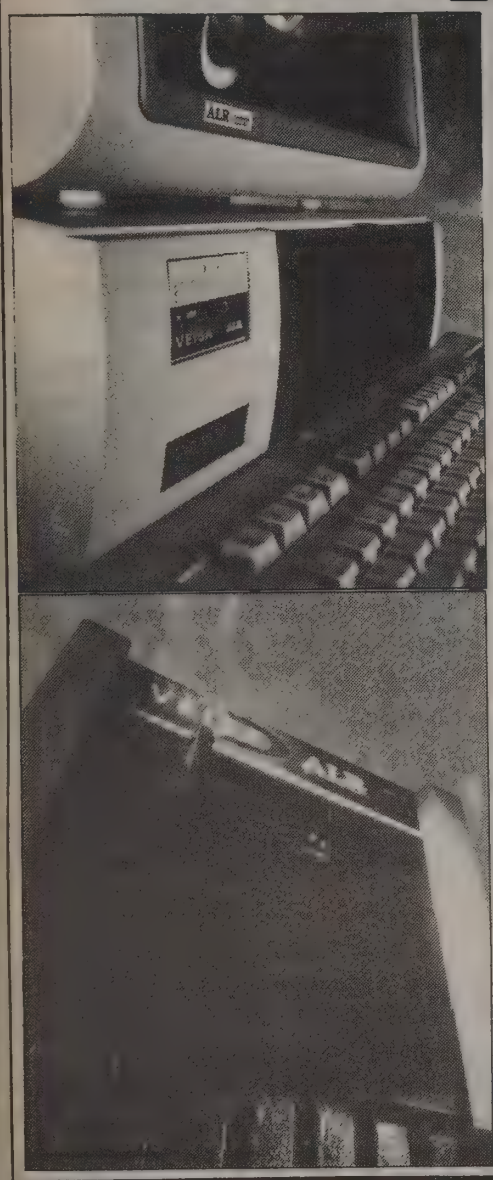

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And Five Years Later ....

The ST Owner's Quandary: Upgrade, Buy A Clone, Or What?

BY DAVID HAWKINS

ATARI ST

Five years ago I bought this Atari ST 1040. I got both the monochrome and color monitors. I haven't made too many changes—replaced the mouse with a trackball and plugged a DeskCart into the cartridge port.

The biggest chunk of my time is spent with Flash, which works just fine. Most of my writing is actually done in the word processor section of Flash, and then uploaded to the WELL. I don't have a printer hooked up. (The last time I wanted to print something, I couldn't find the printer. Now I know it's in a box in the top of the closet. I think.)

The rest of the time lately has been spent with Empire and Chaos Strikes Back. A year ago it would have been Dungeon Master and Empire.

Every month I write a column, which means that normally I go out and get a new program or two. If it's a desktop publishing program, I'll take a disk somewhere and try to print up the finished work.

Quote Of The Month:
"Long-range planning does not deal with future decisions, but with the future of present decisions."
—Peter Drucker

SO, WHERE TO NOW?

And now the question is: Do I want to upgrade the ST or replace it? Add more memory? Add a GCR and run it as a Macintosh lookalike? For what I use the ST for, my machine is fine. But more and more software is coming out that needs more than the 1MB I have now. And the GCR could use a little more memory to run in.

The problem with memory upgrades is that they aren't likely to be supported for any great length of time. And if problems come up after that, I'd really be out of luck. In other words, as long as my Atari is a stock ST, getting it repaired should be fairly easy. But changes make it more difficult to find someone who can work on it. So I think I'll rule out memory upgrades for the time being.

With a possible exception I'll discuss later.

Copyright© 1991 by David Hawkins. All rights reserved. *David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He has one of the first Atari ST 1040s sold in San Francisco.*

TO TT OR NOT TT

Well, it comes down to the TT or an MS-DOS clone. Macintosh prices have come down some, but not enough. (I wrote a couple of checks for taxes over the weekend, so a new Macintosh looks less and less likely.)

The problem with the TT is finding one. After reading about them for months, I went out looking for one. Couldn't find it. Who knows when they'll show up in the stores?

And a clone? Well, they are available. They're cheap. They're easy to fix. And if a graphics interface was important to me, then I'd pick up Windows 3.1. A neighbor just bought a clone and I'm going over to set it up, so I'll see what the latest in the PC world is like.

ONE LAST OPTION

There is one other possibility. Dave Small, who did the Magic Sac and the Spectre GCR, is in beta-test on the SST. As I understand it, the SST will be a 68030 add-on board that runs at 33MHz. You will be able to use the SST to add eight megs of fast RAM to the ST or Mega.

One of the problems would be in putting an additional board in the ST case. Dave suggests getting a clone frame and putting the whole works in there, which would be interesting. Otherwise there would be a heating problem, since the ST doesn't have a fan—or much room for a fan, either.

Frankly, with nine megs or so and a chip running at 33MHz, I'd probably have more computing power than I'd normally use. It would be fun to get the Spectre running at that speed, though.

I think Gadgets by Small will be around for a while, and they have a good reputation for support, so I'm going to wait and see when the SST becomes available. ■

Do I want to upgrade the ST or replace it? Add more memory? Add a GCR and run it as a Macintosh look-alike? For what I use the ST for, my machine is fine. But more and more software is coming out that needs more than the 1MB I have now.

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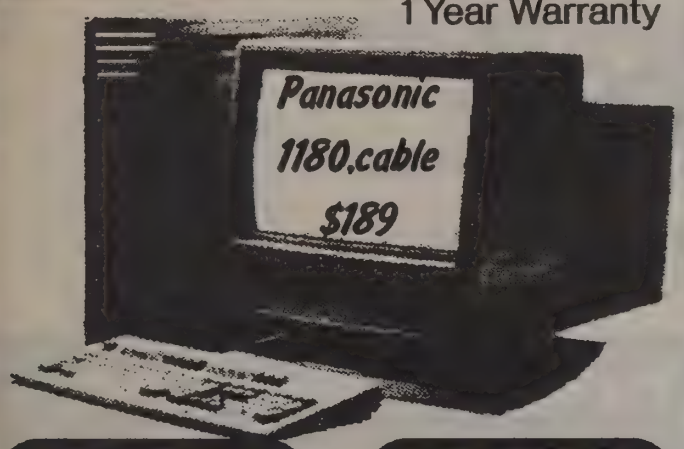

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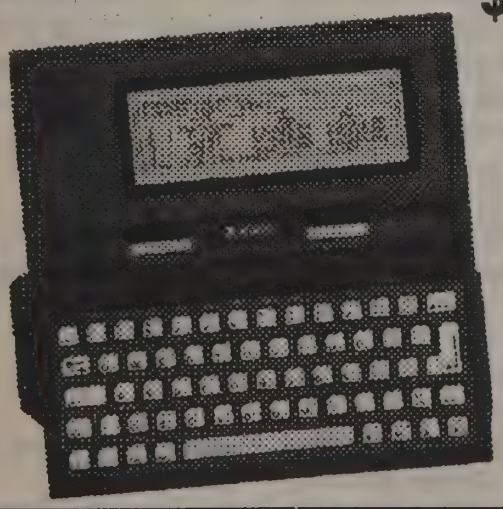

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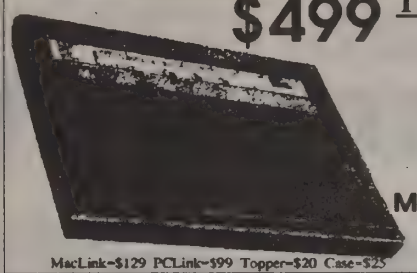

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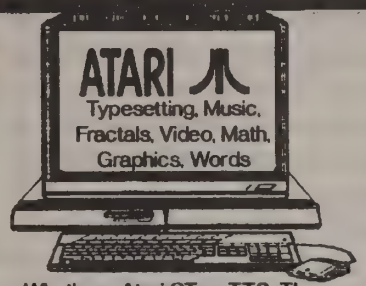

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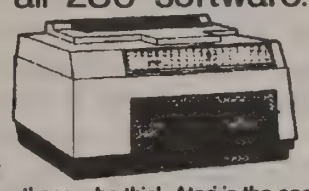

What's an Atari ST or TT? There are those who think Atari is the easiest computer to use and because its programs are so plentiful, powerful, and cheap it gives you the most accessable computing platform in the world. Atari's are great for fun, work, & graphic artists. Unleash your potential with a better "Mac". New STE 1 meg Color system with hard drive: only $1149. 10 free programs.

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Amiga CD-ROM

Taking Advantage Of New Tools

BY MATTHEW LEEDS

AMIGA

By the time you read this, the rollout of CDTV will be history. You'll be able to go into stores in the Los Angeles and San Francisco area and buy a CDTV, software, and check out the world of CD-ROM.

However, if you already own an Amiga, you'll have a long wait for a CDTV peripheral for your system. Commodore has shown an add-on for the A500, but doesn't expect to ship it any sooner than the end of the year. The wait will be even longer for A2000 and A3000 owners.

In the meantime you do have another choice. You can add a CD-ROM drive to your Amiga right now. All you need is a SCSI controller, a CD-ROM drive, and the CDROM-FS driver from Canadian Prototype Replicas. This will let you read ISO9660 CD-ROM discs, and in some cases may let you run CDTV discs.

The files on the Fish CD-ROM are designed to be usable with all known BBS system software that can read ISO 9660 CD ROM discs. This includes MS-DOS and Mac systems.

USING THE CDROM-FS

Getting a copy of the commercial CDROM-FS takes a little work. It's not being marketed very aggressively, but there are two good sources (see below) you can contact. Once that's out of the way, it's easy to put to use. The installation is handled mostly by an install program that copies a new mountlist to your DEVS: directory and a copy of the filesystem to your L: directory. You then add a line to your startup-sequence that mounts the CD-ROM drive. You may need to modify the mountlist, depending on what CD-ROM drive you use, which SCSI controller you own, and how many hard drives you have installed. The whole process took me less than fifteen minutes.

I used a Toshiba XM-5100A1 CD-ROM drive I purchased for about $400. I liked its design for several reasons: it's fast, has a volume control and headphone jack (when I use it for CD-Audio discs), and doesn't require a CD-Caddy. If you've never used CD-ROM drives you should know that some of them require you to place the CD disc into a cartridge-like device called a caddy before you insert the entire assemblage into the drive. Others have a sliding drawer that opens, just like on CD-Audio drives. I prefer the non-caddy drives.

The CDROM-FS supports drives from NEC, Hitachi, Pioneer (including their six-disc CD-ROM changer), Sony, and Toshiba. It does not currently support Chinon drives, or non-SCSI drives. It requires about 100KB of memory per drive for the driver and buffers, and can use up to an additional 100KB for the path table, depending on the disc you use with it.

Copyright © 1991. All rights reserved. *Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.*

THE FISH CD-ROM

I tested it with the HyperMedia Concepts Fred Fish Collection on CD-ROM. The Fish CD-ROM disc contains the first 410 disks of the Fred Fish Collection on a CD-ROM compatible with Commodore's new CDTV and all CD-ROM drives capable of reading ISO 9660 discs. The CD-ROM contains the collection in two formats. The first format is the library in its original form organized by disk. The second format is the collection compressed by disks into ZIP files using the PKAZIP program from PKWARE.

The disk contains several tools at the root level of the CD-ROM disc which allow you to locate virtually any file in the collection almost immediately. Aquarium and ReadMeMaster make it easy to find specific files and/or disks. Utilities such as SID and PKAZIP are also provided at the root level as tools for managing the files on the disc. The second, ZIPPED, offers a copy of the 410 disks in the library for use by BBS system operators who wish to provide the entire collection in the file transfer sections of their systems.

The ZIP format was chosen because it is efficient and is supported on most computer platforms. In planning the file names for the ZIPPED files and the path to the files, special attention was paid to make sure that they did not violate the MS-DOS path and file name restrictions. This should make the files usable with all known BBS system software, regardless of type of computer. The disc is usable by any BBS software that can read ISO 9660 CD ROM discs. This includes MS-DOS and Mac systems.

The Fish CD-ROM disc will be updated three times a year to keep up with the growing Fred Fish collection. Even with 410 disks in two forms on the disc, the utilities, and as a bonus, three GoldFish disks, there is still plenty of room still left on the CD. The Fish CD-ROM and the CDROM-FS are an excellent choice for Amiga user groups and BBS operators. Buying a full set of Fish disks is expensive, and the cost of a CD-ROM drive, the CDROM-FS, and the Fish CD-ROM is still less than half the cost of a full set of Fish disks on floppy. ■

RESOURCES:

Source for CDROM-FS:
Canadian Prototype Replicas
PO Box 8
Breslau, Ontario, Canada
N0B 1M0

Source for CDROM-FS and Fish CD-ROM:
HyperMedia Concepts, Inc.
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May 14–17 Complete Symphony Class. Santa Clara. Tek/Link. Call: (408)727-2300.

May 14 & 21 Macintosh Office Management Workshop. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

May 15 Intro To Prodigy Class. San Rafael. Prodigy Services. Call: (415)955-7400.

May 15 Computer Show & Sale. Cow Palace. Computer Swap. Call: 1-800-433-7469.

May 16 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

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May 16 Ventura Publisher 3.0 Seminar. Sunnyvale. M & P Computer. Call: (408)738-8578.

May 17 Macintosh Presentation Tools For Sales Professionals Seminar. San Francisco. Abacus Training. Call: (415)759-9508.

May 17 Omnipage/Typist Seminar. Sunnyvale. M & P Computer. Call: (408)738-8578.

May 17 Troubleshooting A Novell Network Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

May 18 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

May 18 Computer Show & Sale. Santa Clara County Fairgrounds. Computer Swap. Call: 1-800-433-7469.

May 18 Excel For The Macintosh Class. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

May 18 Intro To WordPerfect 5.1 Class. San Francisco. Pioneer Computer. Call: (415)543-4680.

May 18 Techniques Of Computer Illustration Workshop. Sunnyvale. M & P Computer. Call: (408)738-8578.

May 19 Computer Show & Sale. Hayward. MarketPro. Call: (415)388-8893.

May 20 FileMaker Pro Seminar. San Francisco. Abacus Training. Call: (415)759-9508.

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May 21–22 Document Image Processing Seminar. Santa Clara. Belmont Assoc. Call: (415)591-8236.

May 21–24 Windows 3.0 Applications Programming Seminar. San Mateo. The Noble Group. Call: (415)570-5399.

May 23 Advanced System Administration: Maintaining And Troubleshooting A Novell Network Course. Oakland. DATAssociates. Call: Virginia Sykes, 1-800-444-NOVL.

May 23 DOS Course. Alameda. SymPro. Call: (415)865-0600.

May 23 MacProject: Basics & Beyond Seminar. San Francisco. Abacus Training. Call: (415)759-9508.

May 24 Intro To Prodigy Class. San Francisco. Prodigy Services. Call: (415)955-7400.

May 24 PC Repair Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

May 25 Computer Show & Sale. Concord. MarketPro. Call: (415)388-8893.

May 25 Computer Swap. Cow Palace. Computer Swap. Call: 1-800-433-7469.

May 25 Intro To Lotus Class. San Francisco. Pioneer Computer. Call: (415)543-4680.

May 25 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

May 28–29 Adobe PhotoShop Seminar. San Francisco. Abacus Training. Call: (415)759-9508.

May 28–31 Excel For Windows Class. Santa Clara. Tek/Link. Call: (408)727-2300.

May 29 Intermediate Lotus 1-2-3 Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

May 30 Adobe Illustrator For Beginners Seminar. San Francisco. Abacus Training. Call: (415)759-9508.

May 30 Intermediate WordPerfect Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

continued

MAY 13–AUGUST 24

TELECOMMUNICATIONS COURSES

Golden Gate University

The Department of Telecommunications Management, one of the oldest programs of its kind in the nation, offers degrees and certificates in telecommunications. Courses for the summer term include Intro. to Data Communications, Telecommunications Technology I & II, Corporate Telecommunications, Legal and Regulatory Issues, and Telemarketing: Direct Marketing Through Telecommunications. Most courses meet at the main campus in San Francisco, some courses will be held at the Walnut Creek Center and the Los Altos Center. Contact: Golden Gate University, Department of Telecommunications Management, 536 Mission St., San Francisco. (415)442-7243.

MAY 30–JUNE 2

16TH WEST COAST COMPUTER FAIRE

Moscone Center, San Francisco

The West Coast Computer Faire, the region's oldest computer show, is the only major event to focus on small business computing for multiple platforms and applications. Exhibits will feature nationally known manufacturers, as well as local and regional distributors of small computer systems, software, peripherals, accessories, and related products. People can buy products or just go to try and learn about the latest technology in personal computing. Contact: The Interface Group, Inc., (617)449-6600, Fax (617)449-6953.

Calendar Of Events continued

May 30 System Administration: Managing A Novell Network Course. Oakland. DATAssociates. Call: Virginia Sykes, 1-800-444-NOVL.

JUNE

June 1 Intro To WordPerfect 5.1 Class. San Francisco. Pioneer Computer. Call: (415)543-4680.

June 3 DOS Course. Alameda. SymPro. Call: (415)865-0600.

June 3–6 Xhibition '91: Open Distributed Computing Conference And Trade Show. San Jose. Integrated Computer Solutions. Call: (617)547-0510.

June 3–7 Intensive Intro To C Programming Class. Oakland. Merritt College Computer Center. Call: (415)534-2212.

June 4 Windows 3.0 Course. Alameda. SymPro. Call: (415)865-0600.

June 5 MS Windows Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

June 5–6 Fusion Japan '91 Symposium: The New Wave In US-Japan Hi-Tech Alliances. Santa Clara. ICS. Call: 1-800-626-9044.

June 6 LAN Manager Course. Alameda. SymPro. Call: (415)865-0600.

June 7 Claris Seminar. San Francisco. Abacus Training. Call: (415)759-9508.

June 7 DOS Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

June 7 SQL Basics Course. Alameda. SymPro. Call: (415)865-0600.

June 8 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

June 8 Computer Show & Sale. Santa Clara

JUNE 8

HALTEK & TEST LAB ANNUAL PARKING LOT SALE

Mountain View

Haltek Electronics and Test Lab, plus seven other vendors, are holding their annual parking lot sale. Proceeds from this event go towards the Make-A-Wish Foundation. The sale presents liquidation deals in hi-tech products, ranging from computer systems, keyboards, and monitors to test equipment, components, and power supplies. In addition, there will be food, live music, and an opportunity to win a sailboat. Event location: 1062 & 1066 Linda Vista Ave., Mountain View. (408)744-1333.

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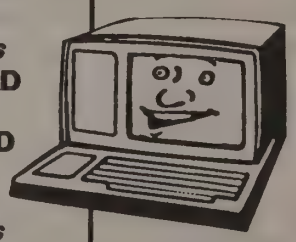
Sun. May 19 - HAYWARD
Centennial Hall
Sat. May 25 - CONCORD
Holiday Inn
Sun. June 2 - VALLEJO
Solano County Fairgrounds
Sat. June 8 - EMERYVILLE
Bay Bridge Holiday Inn
Sun. June 9 - SAN RAFAEL
Holiday Inn-Terra Linda



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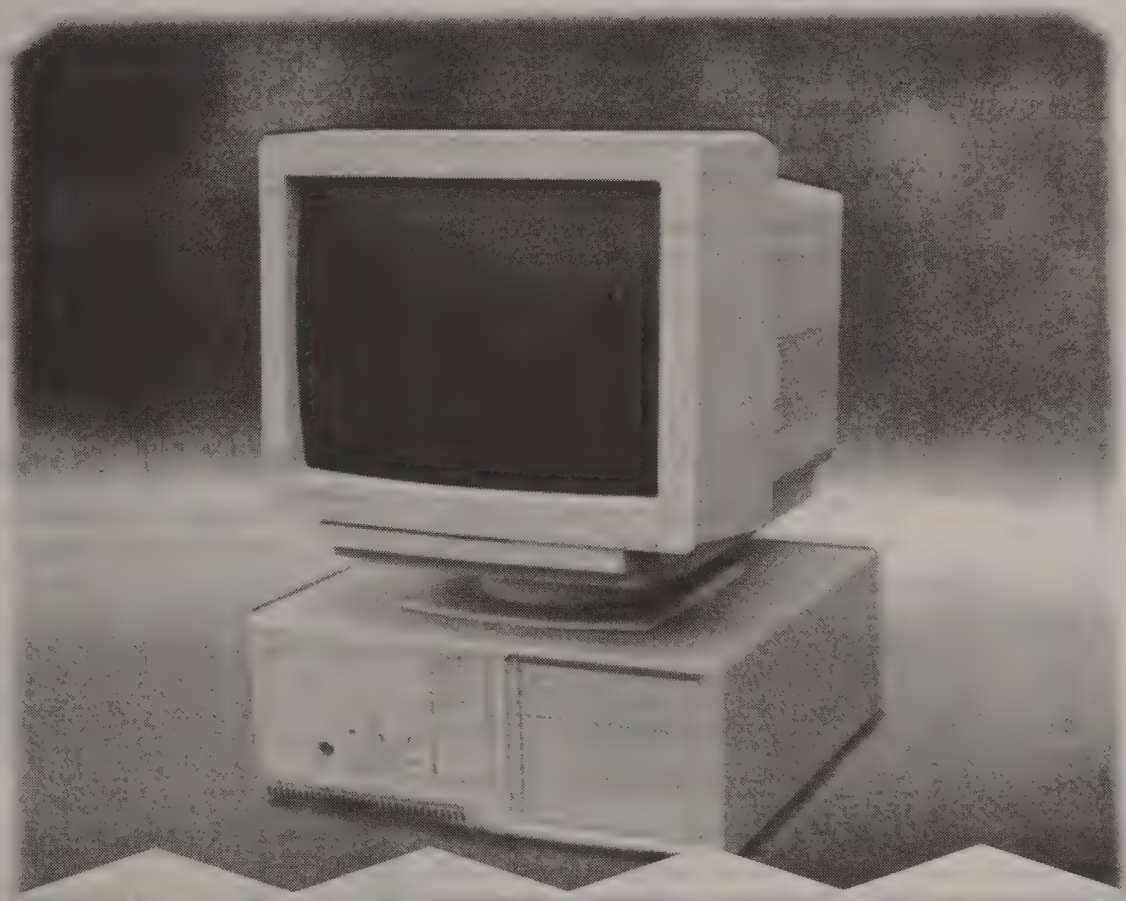

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RAM	Exp. to 16MB	Exp. to 8MB	Exp. to 8MB	Exp. to 8MB	Exp. to 8MB	Exp. to 8MB	RAM
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Math. Copr.	387™	387™SX™	387™SX™	287™	287™	287™	Math. Copr.
Socket							Socket
Expansion Slots	One 32-bit Five 16-bit Two 8-bit	Five 16-bit Three 8-bit	Five 16-bit Three 8-bit	Five 16-bit Three 8-bit	Five 16-bit Three 8-bit	Five 16-bit Three 8-bit	Expansion Slots
Performance Rating	Landmark=34.5 SI=27.9	Landmark=26.1 SI=23.0	Landmark=26.1 SI=23.0	Landmark=26.7 SI=22.5	Landmark=21 SI=18.0	Landmark=16 SI=13.4	Performance Rating
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Calendar Of Events continued

County Fairgrounds. Computer Swap. Call: 1-800-533-7220.

June 8 Intro To Lotus Class. San Francisco. Pioneer Computer. Call: (415)543-4680.

June 11–12 MacroMind Train The Trainer Multimedia Class. San Francisco. MacroMind. Call: Developer/Trainer Services, (415)442-0200.

June 12 Paradox Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

June 13–14 MacroMind's Interactive Multimedia Seminar. San Francisco. MacroMind. Call: (415)442-0200.

June 14 Acius Seminar. San Francisco. Abacus Training. Call: (415)759-9508.

June 15 Computer Show & Sale. Cow Palace. Computer Swap. Call: 1-800-533-7220.

June 15 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

June 20 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

June 20 Advanced System Administration: Maintaining And Troubleshooting A Novell Network Course. Oakland. DATAssociates. Call: Virginia Sykes, 1-800-444-NOVL.

June 21 & 28 MacroMind Director Seminar. San Francisco. Abacus Training. Call: (415)759-9508.

June 22 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

June 23 Computer Show. San Francisco. Ft. Mason Shows. Call: (916)725-0228.

June 27 System Administration: Managing A Novell Network Course. Oakland. DATAssociates. Call: Virginia Sykes, 1-800-444-NOVL.

June 29 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

JULY

July 6 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

July 9–10 MacroMind Train The Trainer Multimedia Class. San Francisco. MacroMind. Call: Developer/Trainer Services, (415)442-0200.

July 11–12 MacroMind's Interactive Multimedia Seminar. San Francisco. MacroMind. Call: (415)442-0200.

July 13 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

July 18 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

July 20 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

July 21 Computer Show. San Francisco. Ft. Mason Shows. Call: (916)725-0228.

July 27 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

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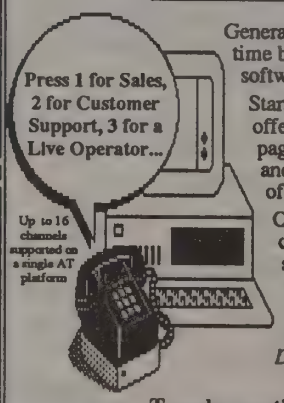

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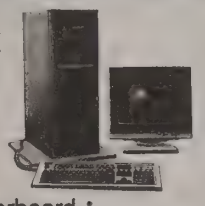

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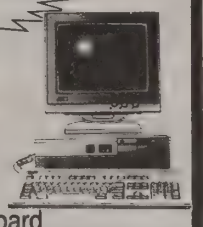

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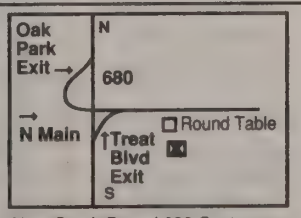

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209

BerthaBoard BBS. (209)239-9853. 8-N-1, 24 hrs., 1200/2400. MS-DOS, C, and Pascal. 800MB online, multinode chat, email, PD and shareware library. Sysop: Kenneth Roach. [Exp. #82.]

408

The Animated BBS. (408)723-1143. 24 hrs., 400MB, matchmaker adult areas, door games. [Exp. #84.]

Club Zen BBS. (408)248-9312. FidoNet 1:161/148.0. Santa Clara Science Fiction BBS. Local discussions files, general silliness and more. Sysop: Mike Wallis. [Exp. #84.]

Code Room. (408)266-3818. 8-N-1, 300/1200/2400. A Programmer's BBS, tons of C files! Doors/messages. Sysop: Ramin Akhbari. [Exp. #84.]

Cruz'In BBS. (408)464-8924. 300/1200/2400. Commodore C/G. Santa Cruz. Sysop: Mike Baldwin. [Exp. #84]

Cruzio. (408)423-9995. 1200/2400. If dialing in @ 1200 baud, send Crtl–C on connect. Serving local Santa Cruz Co. with calendar, directory, conferencing, email and USENET newsgroups. Sysop: Chris Neklason and Peggy Dolgenos. [Exp. #82.]

Data Port BBS. (408)259-3019. 1200/2400. Online games, local main, mail networking, file transfers. FidoNet 1:143/106. SaudiNet 90:8009/106. Sysop: Ian Robertson. [Exp. #82.]

The Electric Pages. (408)253-4280. 300/1200/2400. Commercial and private advertising. Select by category or key words. Online ordering. Voice: (408)253-1709. Sysop: Contemporary Communications, Inc. [Exp. #82.]

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The Lion's Den. (408)578-5724. 24hrs., SIGs, shareware, Clipper/dBASE users welcome. FidoNet/AdultLinks 1:143/370. [Exp. #84.]

Lynn-Western Newswires. (408)778-5994 & 778-9656. 8-N-1, 24 hrs., 1200/2400. FidoNet 1:143/304. Professional information on technology, management, and worldwide investment news. Stock Market data online. [Exp. #84.]

Momnet Telecommunications. (408)244-8556. 8-N-1, 24 hrs., 300/1200/2400. New board that promotes income by Network Marketing. Online services. Voice: (408)244-8555. Net Admin>Mark1. [Exp. #82.]

The Moose Is Loose BBS. (408)773-9573. 1200/2400/9600. The best msg. base under Sunnyvale's fruit can. Sysop: John Giever. [Exp. #83.]

Mountain Retreat BBS. (408)335-4595. Speciality Turbo Pascal, FidoNet, Pascal Echo. Sysop: John Jamieson. [Exp. #83.]

The Razor's Edge. (408)270-4853. 8-N-1, 24 hrs., 2400. Easy access, friendly users, adult GIFs, shareware, special kids forum. Sysop: Crimson Blade. [Exp. #84.]

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Snelling Job Search. (408)241-2305. 300/1200/2400. Tech jobs galore, update daily. Sysop: Brett Stewart [Exp. #84.]

415

The Abyss BBS. (415)482-5813. 24 hrs., 300/1200/2400. IBM/Mac, file & msg base, email. Sysop: Keymaster [Exp. #82.]

& the Temple of the Screaming Electron. (415)935-5845. A safe haven for paranoids nad visionaries. 100MB. NIRVANAnet(tm). Sysop: Jeff Hunter. [Exp. #84.]

AIDS Info BBS. (415)626-1246. 8-N-1, 24 hrs., 1200/2400. 25Mb dBASE with index, keyword search, online help instructions, no chat. Topics on AIDS including read/write discussions, articles, stats, resource contacts, and private email between users. Text only. Sysop: Ben Gardiner. [Exp. #82.]

Amiga Addicts Anonymous (Triple-A). (415)222-9416. 1200–14400 v.42. Technical discussions. Sysop: Randy Spencer. [Exp. #83.]

Art/online! BBS. (415)255-7045. 8-N-1, 1200/2400/9600. Fine Art forum. Sysop: Jim Raridan. [Exp. #83.]

Askkey Xpress BBS. (415)657-1728. 24 hrs., 300/1200/2400. Mac II and Apple II downloads and support, msg bds, online games, 100MB. [Exp. #84.]

BayTalk BBS. (415)864-6430. 8-N-1, 24 hrs., 300/1200. The number one electronic source for text of legislation concerning people with disabilities and catalogs of products for people with visual impairments. [Exp. #84.]

BBS Of San Francisco Apple Core. (415)563-8652. 24 hrs., 2400. Lots of fun, supports Apple II and GS computers. [Exp. #82.]

Bizarre Bazaar BBS. (415)821-4832. 300/1200. WWIV 4.12 software, bilingual (Esperanto) message base and uploads. [Exp. #82.]

Breaking Walls; Building Bridges. (415)827-0804. 24 hrs., 300/1200/2400. Church, gays/lesbians, community, AIDS. Forums, news, confidential mail, care. Sysop: Deacon DVMCC. [Exp. #83.]

California ConneXion Partyline. (415)927-2739. 8-N-1, 24 hrs., 300/1200/8400. 300Mb, 9 lines, chat, worldwide network, 25+ pubs, matchmaking, adults only. Reg required. [Exp. #84.]

CIN-SF Network. (415)239-7925. Free, files, good discussions, topics include: politics, social issues, ethics and rel. from a Catholic perspective Sysop: Hugh O'Regan. [Exp. #82.]

The Classified BBS. (415)665-7918. 8-N-1, 24 hrs., 300/1200/2400. Free advertising, IBM files section, Wildcat BBS support, email. Sysop: John Suelen. [Exp. #84.]

Combat Arms BBS. (415)537-1777. 8-N-1 or E-7-1, 24 hrs., 300/1200/2400. Specializing in firearms, law, aviation, math, science, and Fido echo's. Sysop: Richard Bash. [Exp. #84.]

Compact Disc Exchange. (415)824-7603. 24 hrs., 300/1200/2400. Online CD exchange network. Buy/sell used CDs and collectable discs. Voice: (415)826-9350. Sysop: Wayne Gregori. [Exp. #84.]

COMPU-PAL BBS. (415)538-2040. 8-N-1, 24 hrs., 300/1200/2400. Bible texts and related programs, doors, email, and public domain software. Sysop: Richard Yim. [Exp. #83.]

Compufacts. (415)649-1933. 8-N-1, 24 hrs., 300/1200/2400. Device drivers, jumper, settings, hardware & software support. [Exp. #82.]

The Continumm BBS. (415)755-1524. Daly City. Motion control & data acquisition, multi-interests, email. [Exp. #84.]

CWEST Color Commodore. (415)552-9320. [Exp. #83.]

Diablo BBS. (415)838-7687. Home of EZ-finance. [Exp. #82.]

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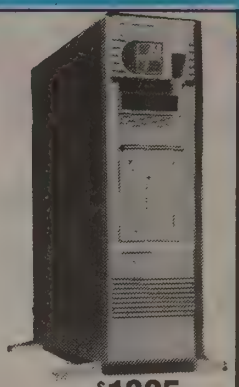

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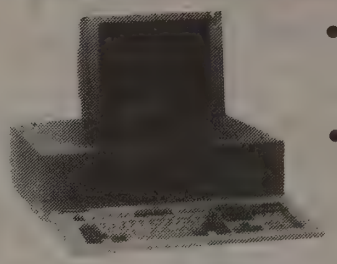

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Computer Professionals For Social Responsibility. Meetings: 2nd Wed., 7:30 pm, UC Berkeley, Evans Hall, room 608-7. Call: Judy Stern, (415)643-7499. [Exp. #84.]

Data Processing Management Association. Call: (415)978-0868. [Exp. #84.]

Independent Computer Consultants Association. Meetings: 2nd Wed., 6:00 pm. Meetings are open to non-members and members. Call: ICCA, (415)441-2948. [Exp. #83.]

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Society For Technical Communication, Silicon Valley Chapter. Meetings: 4th Thurs. Call: September Jenner, (408)971-2336. [Exp. #83.]

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The Association For Worldwide Software Management. Meetings: 2nd Tues., Milpitas Sheraton. Call: Mikael Blaisdell, (415)865-1323. [Exp. #84.]

United Sysops Association. Meetings: 2nd Wed, 7:00 pm, Coco's, 1035 S. Mary Ave., Sunnyvale. Assoc. for system operators and BBS users. Call: Bill Strouse, (408)453-3321. [Exp. #84.]

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ALF—Amiga Learners Forum. Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Beginners group. Call: (408)262-9334. [Exp. #85.]

AWEST Amiga Users. Meetings: 1st Wed., 7:00 pm, Computer Showcase, 2739 Geary. Call: (415)584-8406. [Exp. #87.]

FAUG—First Amiga User's Group. Meetings: 1st Tues., 7:00 pm, Palo Alto Hyatt. Call: Mike Fisher, (415)855-9426, BBS (415)595-2679. [Exp. #84.]

APL

APL Bay Area Users Group. Meetings: 2nd Mon., 7:00 pm. Variable. Call: Tibor Horvath, (415)283-5611. [Exp. #86.]

APPLE

San Francisco Apple Core. Meetings: 3rd Tues., 7:00 pm, SF State University, Hensill Hall, Rm. 205. An Apple II user group. BBSes, newsletter, demos, mentoring, swaps, DTP and telecom sub groups. Call: (415)771-5830. [Exp. #84.]

APRICOT

Apricot User Group, East Bay Chapter. New members welcome. Call: Ron, (415)828-9643. [Exp. #85.]

AT&T UNIX

AT&T Computer User Group-North Bay. Meetings: 1st Wed., new user education, 6:00 pm, program, 7:00 pm, San Francisco AT&T Bldg., 50 Fremont St. Call: Joe Mahoney, (415)584-6510; BBS (415)829-6027. [Exp. #84.]

AT&T Computer User Group-South Bay. Meetings: 3rd Wed., new user education, 6:00 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Joe Lipsig, (408)733-6522; BBS (408)946-7734. [Exp. #84.]

AT&T Computer Users Group. Meetings: 2nd Wed., 6:30 pm. Refreshments, technical support and informal discussions. Also, Sunnyvale DOS and UNIX groups. Call: Jim Lansing, (415)885-6631. [Exp. #84.]

AT&T UNIX Computer User Group-South Bay. Meetings: 4th Wed., new user education, 6:30 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Thad Floryan, (408)985-7100; USENET, thad@cup.portal.com. [Exp. #84.]

ATARI

Bay Area Atari Users Group (BAAUG). Meetings: 1st Mon., 7:30 pm, Agnews Hospital Auditorium, Palm Rd. and Circle Dr., San Jose. Call: Joe Fischer, (408)988-3065. [Exp. #86.]

COAST User Group. Meetings: 3rd Wed., 1514 University Ave., Berkeley. Specializing in DTP, CAD, and serious use. Call: Bill Yerger, (415)548-8999, BBS (415)845-1789. [Exp. #85.]

San Leandro Computer Club. Meetings: 1st Tues., 8:00 pm, San Leandro Public Library. Atari Club, 8/16/32-bit. Call: Keith Sammons, (415)887-2008. [Exp. #84.]

Santa Clara County Atari Users Group. Meetings: 2nd Wed., 7:00 pm, San Jose Computer Showroom, 1278 Alma Court. Formerly South County Atari Users Group. Call: Ron Reade, (408)225-7162, BBS (408)848-6032. [Exp. #84.]

CAD/CAM

AutoCAD DCA Engineering Software Users Group. Meetings: 3rd Wed. Call for location. Call: Mike Foley, (415)734-0707. [Exp. #84.]

Marin ACAD User Group. Meetings: 1st. Thurs. Call: Gigi Bollinger-Himes, (415)491-4722. [Exp. #84.]

SF Bay Area C.A.S.E. Users Group. Meetings: Once per quarter. Call: David Plotkin, (415)842-6706. [Exp. #84.]

Textile Computer Users Group—TCUG. Meetings: Bimonthly, 1st Sun., 10:00–noon. Bedford Hotel, San Francisco. Call: (415)284-1635. [Exp. #84.]

COMMODORE

Commodore Hayward User Group. Meetings: 2nd Sat., 2:00 pm, Palma Ceia Park. (415)793-2514. [Exp. #87.]

Cupertino Chapter Of 64/More Commodore User Group. Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Call: (408)262-9334. [Exp. #85.]

CWEST Commodore 64/128. Meetings: 3rd. Wed., 7:00 pm, Fort Mason. For info: 1564 Waller #B, San Francisco, 94117. Call: (415)626-9946. BBS, (415)626-9946. [Exp. #87.]

North Valley Chapter Of 64/More Commodore User Group. Meetings: 2nd Sat, 10:00 am. Milpitas Library. Call: (408)262-9334. [Exp. #85.]

COMMUNICATION

Toastmaster International. Meetings: Every Wed., 6:00 pm, Laguna Honda Hospital, San Francisco. Improve your communication and presentation skills. Call: Maurine Martin, (415)882-7335 or (415)759-0634. [Exp. #84.]

dBASE

dBASE IV SIG. Meetings: 1st Tues., Ashton-Tate, 6411 Guadalupe Mines Rd., San Jose. SIG of the Silicon Valley dBase Language Group. Call: Charles King, (408)724-7024. [Exp. #84.]

dBASE SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 333 California St., San Francisco. Call: Mark Webster, (415)647-3675. [Exp. #83.]

East Bay Database User Group. Guest speakers. Call: David Chilcott, (415)653-1303, BBS (415)652-1763. [Exp. #85.]

SQL_Forum. Meetings: 1st Thurs., 6:30 pm, 394 Pacific Ave., San Francisco. Topics include client/server computing & SQL database servers. Speakers, demos. Call: (415)695-2748. [Exp. #83.]

SVDLG dBASE SIG. Meetings: 1st Tues., 6:30 pm, ASI, ABSI Birchwood Systems, Suite 480 W., 2001 Gateway Place, San Jose. Call: Fletcher Johnson, (408)283-1333. [Exp. #85.]

SVDLG FoxPro SIG. Meetings: 2nd Thurs., 6:30 pm, ASI, ABSI Birchwood Systems, Suite 480 W., 2001 Gateway Place, San Jose. Call: Fletcher Johnson, (408)283-1333. [Exp. #85.]

DESKTOP PUBLISHING

Bay Area DTP User Group. Meetings: 1st Tues., 7:00 pm, Nisha Software, 3493 Telegraph Ave., Berkeley. Call: Dr. C.J. Wallia, (415)848-8200 or 548-7712. [Exp. #87.]

Desktop Publishing SIG/SFPCUG. Meetings: 3rd Tues., 6:00 pm, 660 Market St., Ste. 215, San Francisco. Call: Eric Leong, (415)635-0159. [Exp. #83.]

EPSON

Bay Area Epson Salts. Meetings: 2nd Tues., 7:30 pm, 2611 Broadway, Redwood City. Call: Joe, (415)364-9232, or Tom, (415)992-5475. [Exp. #86.]

FOURTH

Fourth Interest Group Of North Bay. Meetings: 2nd Sat., 1-5 pm, 2055 Center St., Berkeley. Tutorial at noon. Call: Leonard Morgenstern, (415)376-5241. [Exp. #87.]

Fourth Interest Group Of San Francisco. Meetings: 1st & 3rd Tues., 6:00 pm. Walk to dinner. Call: John Peters, (415)239-5395. [Exp. #87.]

GENEALOGY

Contra Costa PAF User Group. Meetings: Last Sat., Call: Susan, (415)372-6996 or Julia, (415)933-6555. [Exp. #82.]

IBM AND COMPATIBLES

Desktop Video SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: Mike Shurtz, (415)522-1797. [Exp. #83.]

DESQView SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Visitors $3. Call: Adam Baum, (415)841-5628. [Exp. #83.]

EastBay FOG. Meetings: 2nd Wed. All microcomputers, MS-DOS, CP/M. Call: (415)272-9099. [Exp. #87.]

GeoWorks SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: Larry Yurdin, (415)527-2647. [Exp. #83.]

Golden Gate Computer Society (GGCS). Meetings: 4th Mon. 7:30 pm, San Rafael Community Center. Call: (415)927-2909. BBS (415)927-1216. [Exp. #83.]

Investments SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: George Montgomery, (707)795-5673. [Exp. #83.]

Napa Valley PC User Group. Meetings: 2nd Wed., 7:30 pm, 10 Chapel Hill Dr., Napa. Call: Lee Schwab, (707)257-2675. [Exp. #85.]

PC Clubhouse. Meetings: 1st Fri., 8:00 pm, Meiklejohn Hall, CSU Hayward. Many SIGs. CV BBS: (415)581-8529. San Leandro BBS: (415)357-9577. Call: Roberta, (415)429-1007. [Exp. #87.]

PCjr SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: John King, (415)472-7035. [Exp. #83.]

San Francisco PC Users Group. Meetings: 3rd Mon., 7:30 pm, UCSF Laurel Heights, 333 Califronia St., San Francisco. Call: (415)221-9166, BBS (415)621-2609. [Exp. #82.]

San Lorenzo User Group. Meetings: 2nd Tues. and the 20th, 7:00 pm, Gathering Place in Ben Loman, Santa Cruz County. Call: Chuck Schafer, (408)338-7348, BBS (408)335-4672. [Exp. # 86.]

WordPerfect SIG/SFPCUG. Meetings: 3rd Mon., 6:30 pm, UCSF, 3333 California St., San Francisco. Visitors $3. Call: Kendall Callas, (415)821-1310. [Exp. #83.]

KNOWLEDGEMAN

Bay Area KnowledgeMan (And Guru) User Group. Meetings: 1st Tues., 6:30 pm. JNZ, Inc., Lafayette. A forum for discussion and info concerning mdbs products, esp. KnowledgeMan and Guru. Call: (415)947-4878, BBS (415)935-4878. [Exp. #86.]

LAPTOPS

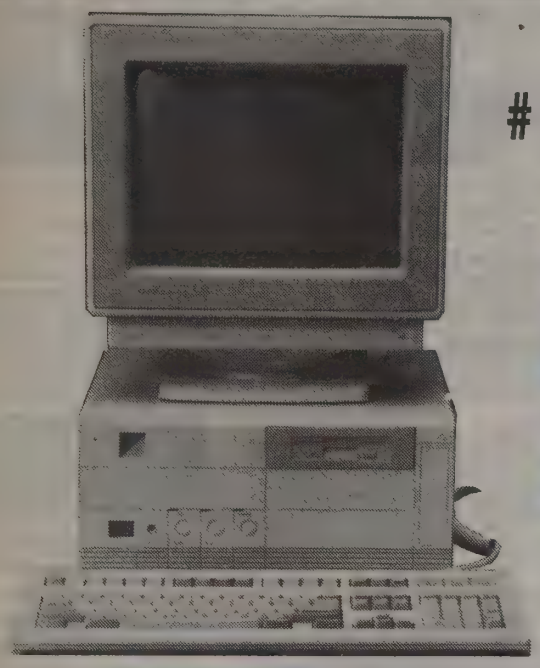
Bay HPX HP Laptops & Handhelds. Meetings: 2nd Sat. Call: Michael Felsenstein, (415)564-8279. [Exp. #84.]

MACINTOSH

North Coast Mac Users Group. Meetings: 3rd Thurs., 7:30 pm. Lark 2004, Santa Rosa Jr. College. SIGs on development, programming, and multimedia authoring, networking, graphics, and more. Call: Reed Hopkins, (707)542-1089, BBS (707)792-1871. [Exp. #85.]

MacSEF. Meetings: 3rd Tues., 7:00 pm, Call: Tony Meadow, (415)644-9400. [Exp. #84.]

Continued on page 250



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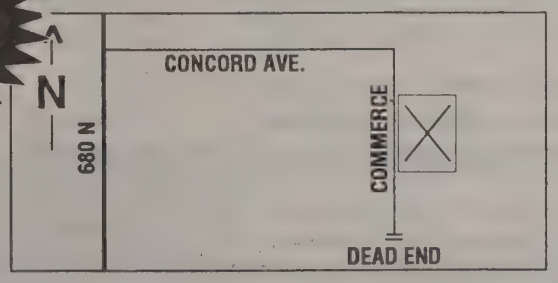

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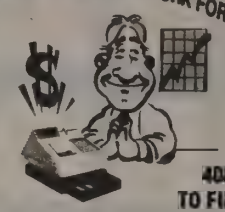

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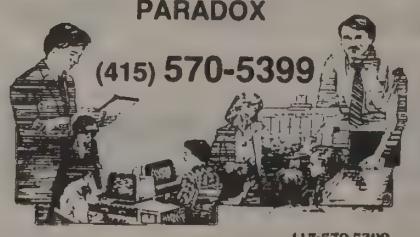

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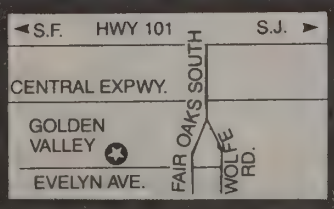

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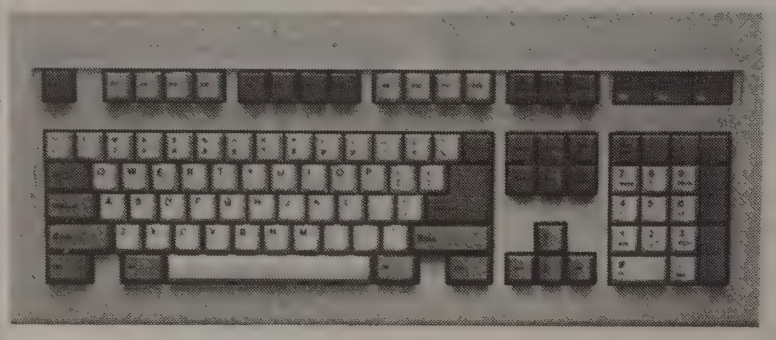

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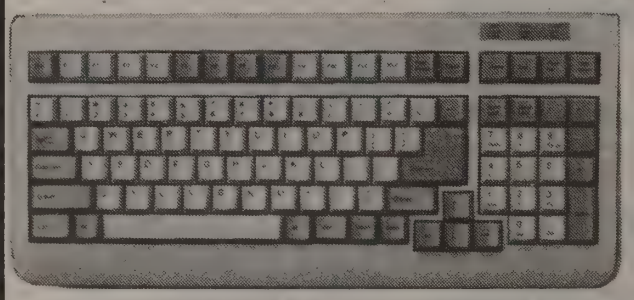

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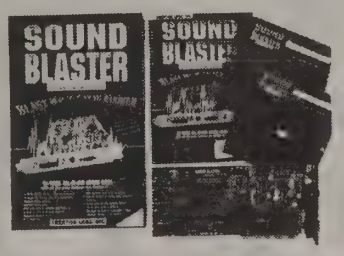

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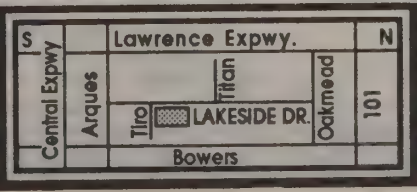

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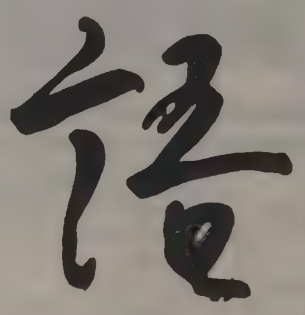

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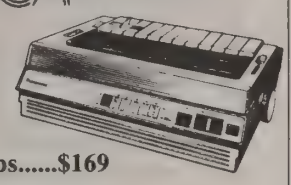

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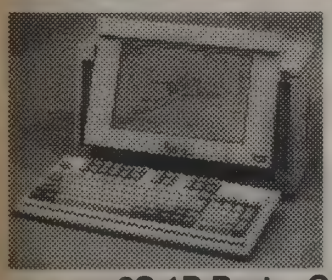

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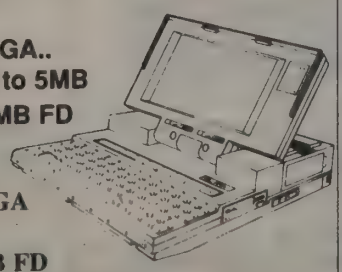

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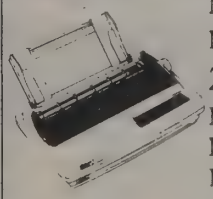

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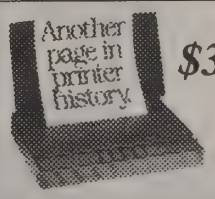

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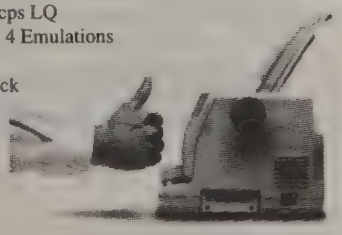

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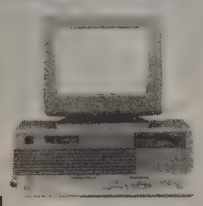

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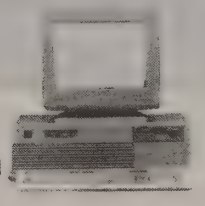

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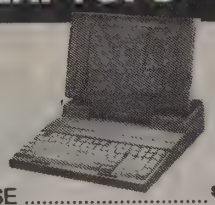

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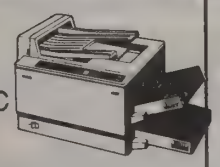

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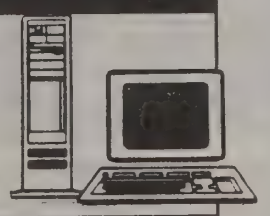

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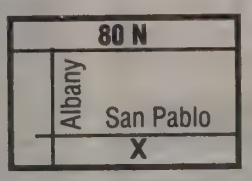

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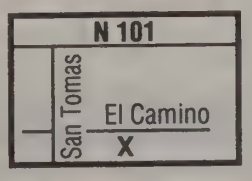

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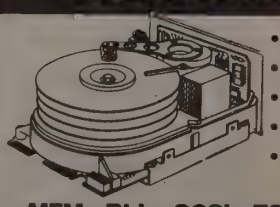

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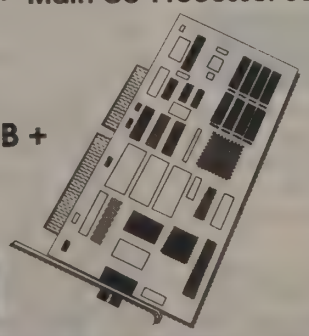

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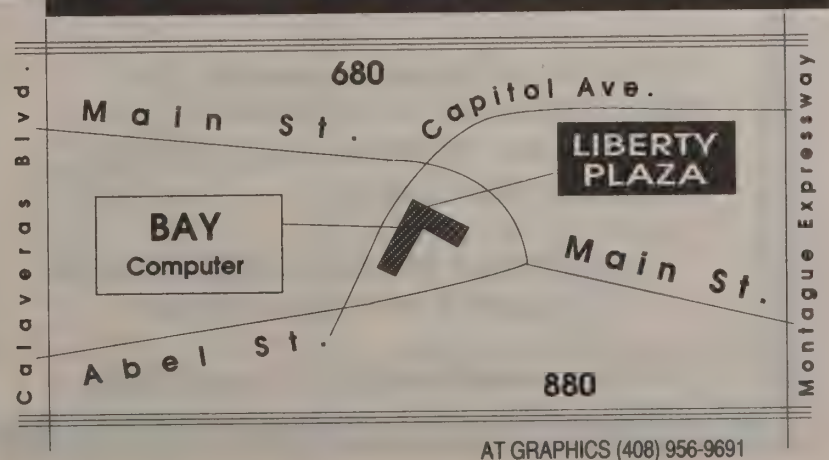

AT GRAPHICS (408) 956-9691

Continued from page 44

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POWER UP

One of the more important things a network must deliver to its clients is reliability. To that end, all networks need a source of dependable power. Which, of course, is why we're all using uninterruptible power supplies and other forms of backup power. Right?

But I've always had one nagging doubt about these systems. How do you know they're working—before it's too late? You can certainly tell when they've failed! Their very nature, though, prevents you from knowing if they're working properly if there isn't a disaster. Is your system running because your UPS or standby system is working, or because it's simply never been challenged? The same question holds for the surge protectors on your work stations. And what if that standby unit is periodically switching to its batteries? Is it protecting from surges and brownouts, or is its switch just malfunctioning?

Now there's an easy way to know for sure. Tasco makes a pair of power monitors that will let you know the exact condition of your power. Its $138 AC monitor gives you a constant readout of your actual voltage from 100 to 130V in 5V increments. It also features an array of latching lamps for spikes, high voltage, low voltage, and total failure.

For $538 Tasco's Computer Power Monitor (CPM120) provides much more. It not only warns of drop outs and spikes from line to neutral, but from neutral to ground as well. It will also tell you if there is more than nominal current between neutral and ground—a sign of a faulty ground—and it warns you of reversed-line-and-ground or missing-ground defects. In addition to detecting and reporting these conditions, it guides you to solutions: power conditioner, UPS or SPS,

I've always had one nagging doubt about backup power systems. How do you know they're working—before it's too late?

or an electrician. The CPM120 is overkill just for monitoring power, but its other features are ideal if you maintain equipment attached to many different circuits. As a consultant, I found that defective grounds and reversed line and neutral were not uncommon conditions. But because neither condition prevents a lamp from lighting, they can easily go undetected without a tool like the CPM120.

You can hook either of these testers to your incoming line and monitor your raw power. Or, you can hook one of them up to your power conditioning system to see if anything's getting through. A pair could even be used to make comparisons. Leave either connected on a regular basis, and if a problem defeats your system, you'll be well informed on how to bolster your protection. Tasco, by the way, has a free catalog full of interesting test instruments, and the company will ship any of them for a 30-day free trial. ■

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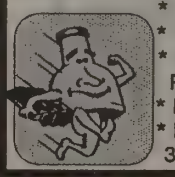

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Continued from page 24

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messages on its electronic network that criticized [new email] charges," and said they "kicked a 'handful' of the dissenting subscribers off the service."

More recently, Prodigy reported that, during this tempest, they increased subscribers. Sure! The increase paralleled a *massive* prime-time publicity campaign. Barnum was right.

AT&T IT AIN'T

Can you imagine AT&T cutting off service to those who were openly critical of their rate increases, or voiced their criticisms over AT&T lines? Can you imagine AT&T censoring phone users' comments to one another?

On the other hand, can you imagine AT&T granting *unlimited* phone use for a ridiculously tiny fixed monthly fee? After all, that's how Prodigy initially offered their email service. Some claim it was intentional bait-and-switch pricing; others say it was simply naive—or just plain stupid.

WHAT TO DO ABOUT PRODIGY?

Some folks howled for legislation to force Prodigy, a private corporation, to continue its loss-leading (or naive) fees or provide teleconferencing far beyond what its advertisers needed.

Others demanded no censorship—regardless, apparently, of content or liability for libel or "adult" comments posted on a public system to which children have access. Wanna bet that, if a lawsuit's possible, deep-pockets Prodigy would be the primary target, not the originator of the offending message? Wow, what a scam! Prohibit content control, then sue for offensive content. Or, just let some customers actively offend and outrage other customers.

Some folks propose suing Prodigy over bait-and-switch tactics (which might be illegal). Litigation's less likely for censorship (which probably isn't illegal). Wanna bet that not a single litigant pursues the suit to any conclusion mandating policy changes? Wanna bet that the only thing Prodigy users will get will be more fine print in their subscription agreement?

Prodigy offers something akin to junk mail (tax-underwritten) and junk advertising inserts in (subscription) newspapers—and has convinced lots of folks to actually pay money to receive it.

In the process they *do* provide some product searching and ordering services, plus limited counterparts to newspapers' "Letters to the Editor" sections, and limited email service isolated from most global email users.

LET THE MARKET JUDGE PRODIGY

Forget the lawsuits. Forget creating yet another gawd-awful regulatory bureaucracy. Let those paying for Prodigy's services—advertisers and subscribers—decide whether the services justify the fees.

View Prodigy as a delightful datacomm drug dealer—providing the first "fix" at least inexpensively, if not for free. Let 'em "hook" people on using (limited) email and (censored) teleconferencing.

Then, do everything possible to inform Prodigy users about the much more valuable and robust services and freedom available Beyond Plodding. ■

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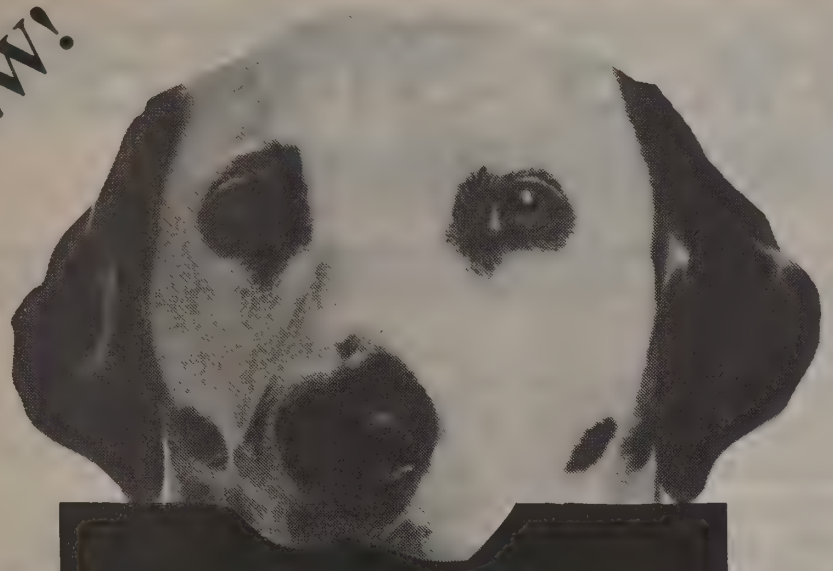

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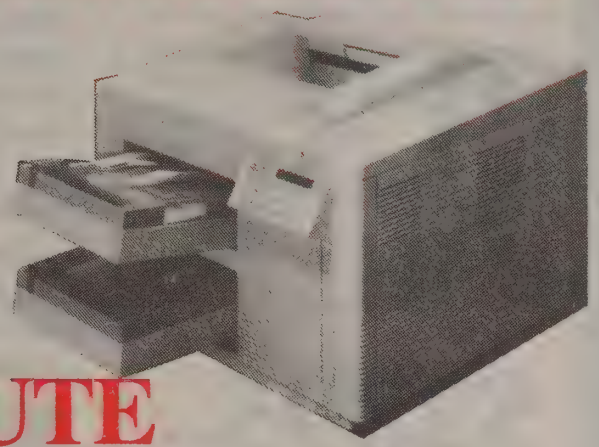

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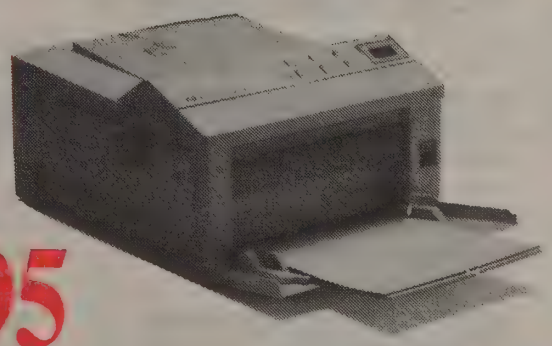

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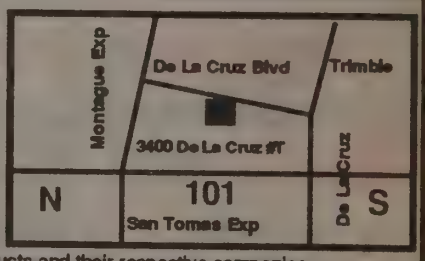

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Macromind Multimedia User Group And Video SIG. For more information, call: (415)442-6200. [Exp. #83.]

The International Interactive Society—IICS. Meetings: 2nd Tues., 7:00 pm, UCSF Laurel Heights Conference Center. Call: (415)328-7318. [Exp. #85.]

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NETWORKING

NetSIG. Meetings: 4th Tues., 7:00 pm, Novell Sunnyvale. Networking SIG for Software Developers. SEF group. Call: Skip Addison, (408)747-4356. [Exp. #87.]

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BANG—Bay Area NeXT Group. Meetings: 3rd Wed., 7:00 pm, Terman Aud., Stanford. Presentations and lectures. [Exp. #87.]

NOVELL

Silicon Valley Novell User Group. Meetings: 3rd Wed., 6:30 pm, Coco's, 1305 S. Mary Ave., Sunnyvale. Call: Bill Strouse, (408)453-3321. BBA (408)453-3326. [Exp. #86.]

The East Bay Novell Users Group. Call: George M. Gold, (415)444-4899. [Exp. #86.]

The San Francisco Novell Users Group. Call: Thomas Thibault, (415)944-9500. [Exp. #86.]

PARADOX

Bay Area Paradox User Group—BAPALS. Meetings: 4th Tues., 4:00 pm, SF State University Downtown Campus. Forum for users and developers at all levels. Call: Robert Smiley, (415)957-4656. [Exp. #87.]

Paradox SIG/SFPCUG. Meetings: 3rd Mon., 6:15, UCSF, 333 California St., San Francisco. Call: Richard Haven, (415)566-8076. [Exp. #83.]

PROGRAMMING LANGUAGES

SVDLG C SIG. Meetings: 3rd Mon., 7:00 pm, Techmart, Santa Clara. Call: Fletcher Johnson, (408)283-1333. [Exp. #85.]

RACES

California Races Group. Meetings: Tues., 7:00 pm, 1491 River Park Dr., Sacramento. Technical discussions on computerized emergency communications. Call: Jim West, (916)991-5505. [Exp. #87.]

R:BASE

R:Base Users Group Of Oakland. Meetings: 2nd Thurs., 9:00 am. Call: Longwell Assoc., (415)451-5316. [Exp. #87.]

UNIX/XENIX

UNIX SIG. Meetings: 2nd Tues., Oracle Corp. Fitness Center, Redwood Shores. Sponsored by Software Entrepreneurs Forum. Call: Priscilla Rowe, (415)776-0513. [Exp. #85.]

UNIX SIG/SFPCUG. Meetings: Last Wed., 7:30 pm, Call: John Tait, (415)386-9230. [Exp. #83.]

UNIX/XENIX User Group Of N. CA. Meetings: Call: Ren Just, (707)664=0820 or BBS (707)795-1721. [Exp. #83.]

WINDOWS

Windows 3 & Applications SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 333 California St., San Francisco. Call: Ron Person, (707)539-1525. [Exp. #83.]

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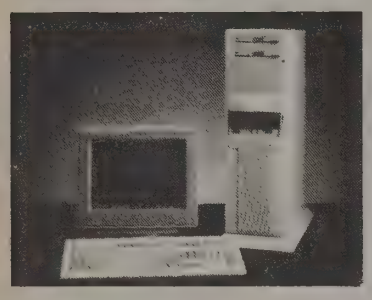

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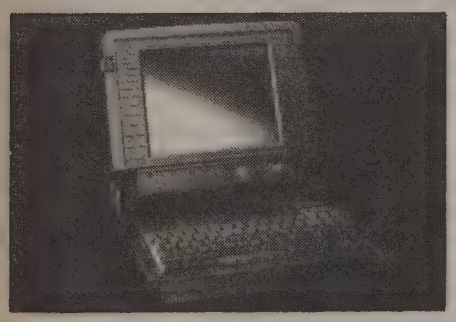

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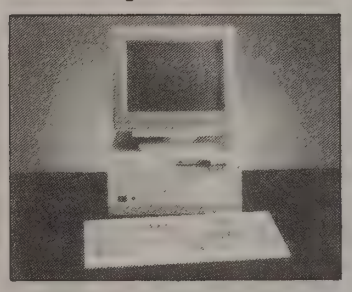

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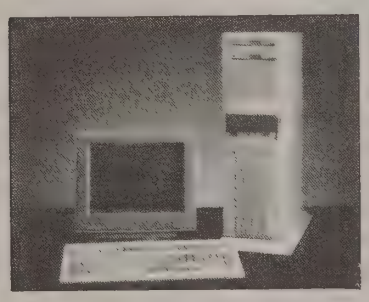

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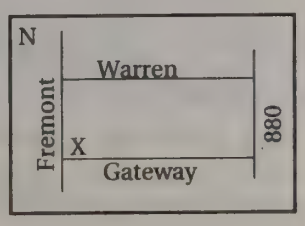

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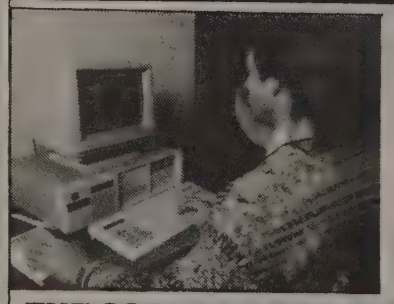

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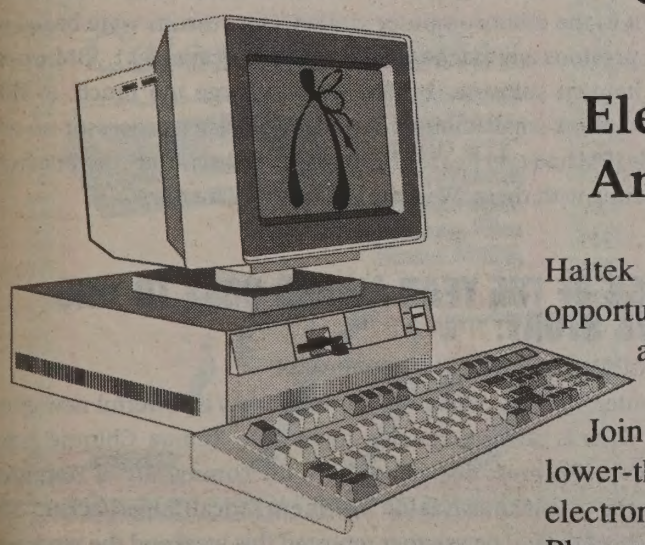

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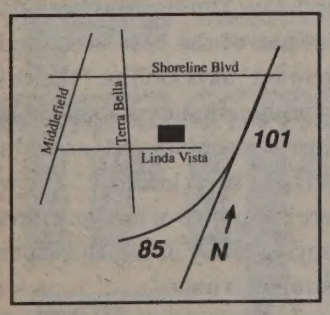

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The Dvorak Grab-Bag

Or What Do I Do With All These Items?

BY JOHN C. DVORAK

DVORAK'S LAST COLUMN

Every so often I have to clean up the hard disk. One of my files contains ideas, comments, letters and a miscellany of interesting items which I keep promising to expand into columns. Instead I run them here for other columnists and would-be technology writers to use in their columns. Live it up.

Let's start with a suggestion I received from Rashid Nassar over CompuServe. This just proves that everything, even the petty, is worth a gripe.

"The following concern may appear to be trivial, but I find it at best to be irksome. When we are in danger of losing our data, for example, by exiting a program without first saving our work, good programs are supposed to remind us of the consequences. They frequently do that by asking a question that requires a Y(es) or a N(o) answer. Unfortunately, the question is asked in different ways by different programs. For example, one program might ask, 'Are you sure you want to exit without saving? Y/N,' while another would ask, 'You did not save your changes. Save? Y/N.' 'N' in the first case would save you from losing your work, but in the second case it would cause you to lose it. This is not a problem if one always reads the question carefully. Frequently, I think I know the question asked and I answer, more or less, automatically. This can be particularly bad when one program requires a Yes after one operation is requested, and a No when a different operation is requested, in order to prevent loss of data.

"I, therefore, would like to propose a standard or a recommendation or a guideline on this subject. This would concern itself, presumably, only with the consequences of a 'Y' or 'N' response, not the wording of the question that program poses, i.e. whether 'Y' should result in 'Yes, save the file' or 'Yes, exit without saving.' Perhaps the most common usage at present can be taken as a starting point (however 'most common usage' is gauged), since there appears to me to be no logical basis for choosing one over the other."

Sheesh. This guy was more confusing than the problem. I figure a programmer would like the above item. What can I say? I felt obliged to run it.

© 1991 by John C. Dvorak. All rights reserved. *John C. Dvorak graduated from the University of California. He is a contributing editor of* PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

AND NOW FOR SOMETHING COMPLETELY DIFFERENT.

Here's an interesting observation made by Mike Swaine a couple of years ago in a *Dr. Dobb's Journal* column. He pointed out that computers were originally invented to replace women who were used in battalions as human calculators during WWII. From that point hackers have also come to regard computers as substitutes for women! I don't know what it means, but it's interesting.

SIX FUNNY LINES I'VE NEVER BEEN ABLE TO USE:

1. First there was OS/2 EE meaning extended edition. Now there is OS/2 EP meaning OS/2 extended payment edition.
2. When the going gets tough, the tough start selling.
3. The reason for the failure of OS/2? Because Dan Bricklin didn't immediately port his demo program over to OS/2. Phony programs make the world go round.
4. It leaves your mouth subway fresh.
5. It's like some guy inventing the 3200 baud modem.
6. Oxymoron of the month: the new machine is a NeXT killer.

WHATEVER HAPPENED TO? DEPT.

I received these notes in 1989.

Item ONE: "IBM Japan finally announced their PS/55, Japanese version, compatible notebook laptop. At the last minute they decided to make it PS/55 compatible in order to compete effectively with Toshiba. It is an IC card version that will retail for 198,000 Yen, the same as the Toshiba Dynabook. The CPU is an 80C186. It is OEMd from Ricoh."

Has anyone ever seen this thing?

Item TWO: "Did you see Norton-Lambert's ad for Close-Up/LAN, p. 4, *InfoWorld* March 13; specifically, section 2, paragraph 2: 'With another hot key you decide to look in on Sue's computer screen. She's new and you need to keep an eye on her work. You see that she is working on a letter using a wordprocessor (sic). You monitor her for awhile without interfering with her work. In fact, Sue doesn't even know you're there!'"

Is anyone still using this?

From Allan F. Abrahamse came this observation:

"Here's something I've enjoyed thinking about recently; perhaps you will too. A quote from the first paragraph of *The IBM Personal Computer from the Inside Out* by Murray Sargent and Richard Shoemaker, published in 1984: 'A year before IBM announced its now famous personal computer, we concluded that IBM would never make it in the microcomputer market. Our reasons were based on IBM's previous approaches and seemed inescapable: 1. IBM would write its own software. 2. IBM would charge too much. 3. IBM couldn't think small enough. 4. IBM would use a processor no one outside IBM had ever heard of. 5. IBM would discourage anyone from competing with them. We were wrong ...' Were they?"

CROCK OF THE YEAR AWARD GOES TO THIS NEWS STORY:

NEW COMPUTER VIRUS IN ZIMBABWE

Computer industry officials in Zimbabwe say a powerful new computer virus is striking systems there. The Xinhua Chinese news service quotes press dispatches from the community of Harare as saying the virus is known as the "Southern African Superhacker." The city's *Sunday Mail* newspaper reported this weekend the virus was discovered six weeks ago and, says Xinhua, "has been described by the business community as one of the best structured pieces of software that has been seen so far." Says Xinhua, "The virus was first seen on the computers of a multinational company in Harare. The company quickly closed down its machines and isolated all the disks in their company that could have been infected." The wire service added, "In Zimbabwe, where a shortage of foreign currency makes the theft of software by copying a way of life, the exposure of the computer industry to catastrophe is huge."

Another story planted to sell virus protection software. Well, whatever works!

Now I won't feel guilty about erasing these files.■

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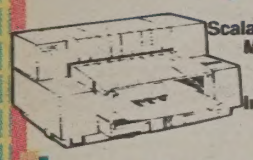

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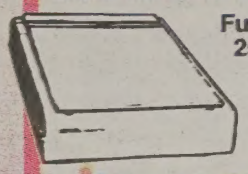

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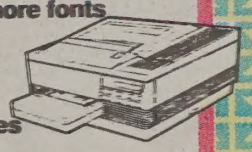

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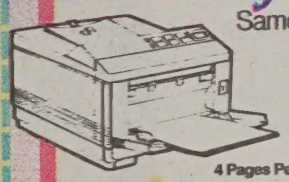

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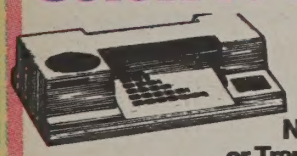

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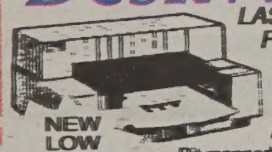

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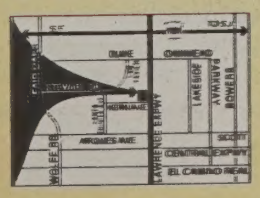

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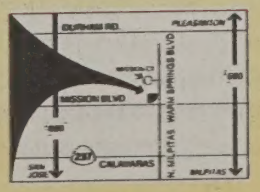

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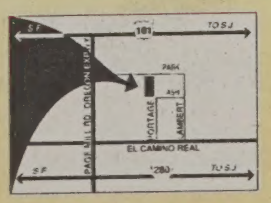

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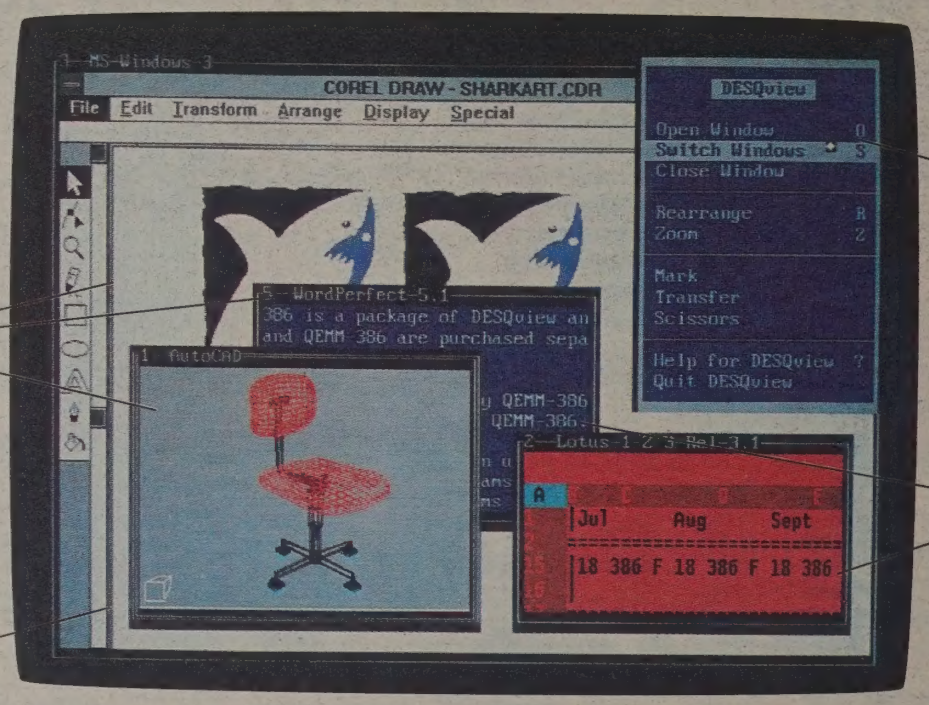

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